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Meeting the Challenge of Rapid Change in Media Industries: A Case Study in Media Programs at Canadian Colleges, Polytechnics, and Universities

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Meeting the Challenge of Rapid Change in Media Industries: A Case Study in Media Programs at Canadian Colleges, Polytechnics, and Universities

by

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Abstract

The purpose of this study was to investigate the extent to which keeping pace with rapid change in media technologies and production techniques poses a leadership challenge for post-secondary institutions offering media production programs. Contributing factors to the challenge include declining funding for capital investment, and lengthy review and approval processes for curriculum development and revision. These factors, as well as educators' best practices in addressing the challenge, were considered in the context of relevant literature on media industries, change management, and leadership practice.

Utilising a particularistic case study methodology and explanatory sequential data collection methods, the study sought to investigate a practical problem arising from everyday practice through collection of a diverse set of both quantitative and qualitative data. Specifically, data were collected through questionnaires from 96 participants working in post-secondary institutions and was supplemented by questionnaires completed by 25 media industries employers. A subset of 20 respondents to the post-secondary questionnaire participated in follow-up interviews to further clarify the findings from both the post-secondary and industry questionnaires.

It is apparent from the findings that rapid and increasing change in media industries poses a very real challenge for media educators. The currency of curriculum and technical resources is an important factor in ensuring students graduate with the skills and abilities necessary to enter the work force. While there is no single ready solution to this problem, the findings also revealed the multiple tactics media educators have developed to mitigate the impact of rapid change, and the respondents' perspectives on the potential value that project management tools, changes to organisational culture, and leadership styles might have for improving outcomes in this area.

It is hoped that these findings will prove useful to media educators tasked with deciding on technologies in which to invest and at what time, and how best to integrate new production techniques into curriculum. It is also hoped that these findings will prompt further study, expand the conversation to additional stakeholders, and contribute to larger conversations around academic program development and delivery.

Preface

This thesis is original, unpublished, independent work by the author, R. Carver. The data collection methods reported in Chapters 2 to 4 were covered by Ethics Certificate number REB15-2389, issued by the Conjoint Faculties Research Ethics Board at the University of Calgary for the project "Meeting the Challenge of Rapid Change in Media Industries: A Roadmap for Canadian Colleges and Universities" on April 18, 2016.

Acknowledgements

There are so many people to thank for their help and support with this study that I might as well start right now by apologising for not recognising all parties sufficiently.

I begin by thanking the faculty and staff of the Werklund School of Education at the University of Calgary for their expert teaching and guidance, particularly Dr. Ann Calvert, who served as my supervisor up to August 2018 before having to step down for personal reasons, and Dr. Beaumie Kim who gamely stepped up in the home stretch to shepherd my writing through much-needed revisions to its final state. My thanks also to both my oral candidacy and oral defense committee members, Dr. Charles Davis, Dr. Sharon Friesen, Professor Gerald Hushlak, Dr. Michele Jacobsen, and Dr. Brenda Spencer. Thanks to Program Director Dr. Kim Lenters for her help with the supervisor transition, and her kind consideration of extensions to see this project through to its completion, and to Graduate Program Administrator Brenda Tschanz, who is always there to help students navigate the deadlines and requirements on their doctoral journey.

I was also blessed to be part of a brilliant and highly collaborative cohort from diverse backgrounds, whose critical thinking skills helped inform my perspective through classroom discussions, group work and feedback. My thanks to all my classmates, who have stayed connected and cheered each other on toward the finish line.

A very big thanks to all participants in the study, who generously gave of their time to complete the educator and industry surveys, and a special thanks to those participants who also took part in a follow-up interview, which in some cases ran as long as 90 minutes. I am forever in your debt for your patience and your keen interest in this project.

Special thanks also to my questionnaire testers, Shel and Stephanie Reisler, who endured two rounds of dry runs with the questionnaires and provided very detailed and useful feedback on the clarity and focus of the questions. These instruments were much improved as a result of your input.

Amanda Whittingham and Taylor Strutton sorted the data and created the charts used in this dissertation, and I thank them for their design expertise, and making it possible for me to draw meaningful observations across diverse stakeholder groups. Likewise, I thank editor Jennifer Parsons for two rounds of review of the final document, ensuring APA compliance and overall improvement to the clarity of the writing.

My greatest thanks are reserved for my wife Bonnie McCorquodale, who was also a questionnaire tester, and who has served as proof-reader, cheer-leader, and sustenance provider through three graduate degrees so far.

It’s the last one, Bonnie. I promise!

Dedication

This dissertation is dedicated to the memory of my friend and colleague, Professor Dana Lee, who taught for over 20 years in the RTA School of Media at Ryerson University. I had the great pleasure of co-teaching television production with Dana, and he also served as my academic supervisor for my MA in Media Production at Ryerson for the project "Educational Applications of Blu-ray DVD Technology."

Not many people could turn an 8:00 a.m. lecture on television technical theory into a not-to-be-missed event, but that was Dana. An avid early adopter, he had a boundless curiosity and passion for media technology and its application, matched only by a deep love of teaching and commitment to student success. When he was diagnosed with the aggressive brain cancer glioblastoma, he turned that curiosity to learning about the brain and delivered a 45-minute lecture to the colleagues and students who had gathered at the hospital to wish him well.

When I undertook this study, I knew from the start that I wanted Dana to take part, and he happily agreed. He completed the educator questionnaire, but when the time came to do follow up interviews, he was unfortunately too ill to participate. Dana passed away March 2, 2018 and, in the final stretch of completing this study, I have kept a commemorative bookmark from his celebration of life propped on my desk near my computer. It contains some of his final words: "Universe. Brilliant. Amazing. Wonderful. Believe it." He has been my inspiration to keep going and see this project though to its conclusion.

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Chapter 1: Introduction

The purpose of this study was to explore the challenges post-secondary educators running media production programs in Canadian colleges, polytechnics, and universities face in keeping pace with the rapid evolution of media technologies and production techniques. The study is significant in that new technologies and techniques are emerging at a rate that, in some cases, outpaces the duration of undergraduate programs (Molebash, 2009; Soskey, 2012). While this research will no doubt be of interest to media studies educators on an international scale, Canada faces some unique market challenges operating in the shadow of the United States of America (USA), a media content producer ten times its size. American content dominates English-speaking Canada's media consumption, and in recent years industry consolidation in Canada has meant that many traditional media jobs have disappeared or reduced in number to the extent that they are no longer viable as a career goal ("Media Convergence," 2010; Faguy, 2012). Canada's media industries operate under unique financing models to combat USA influence, and Canadian media properties generally require international sales and/or coproduction agreements to be commercially viable (Hoskins & McFadyen, 1993; "Canadian Television", 2008).

A particularistic case study design was developed for this study, incorporating both quantitative and qualitative methods to gather empirical data on a practical research problem arising from everyday practice (Merriam, 1998). This allowed me to investigate possible approaches to addressing the challenge of meeting rapid change, and gather first-hand insight from key stakeholders into the potential effectiveness of those approaches. An explanatory sequential data collection approach was utilised, with phase one involving the collection of quantitative data from academic and industry stakeholders, and phase two consisting of a qualitative exploration involving a smaller group from the academic sector. It is hoped that the

findings of this study will add new knowledge to the field of education with regard to long term planning and timely decision-making where the development of media program curriculum and support infrastructure are concerned.

Problem Statement

Educational institutions offering programs in digital media face significant challenges in planning capital investment and curriculum development to ensure students graduate ready to work in an industry that has changed since their enrolment several years earlier. The explosion of online distribution models is threatening the future of the advertiser-supported broadcast model, leaving many wondering where to focus training for the future (Kaplan, 2009; Rushton, 2012). Recent advances in high-definition (HD), ultra-high-definition (UHD), high frame rate (HFR), 3D, 360 video, augmented reality (AR),virtual reality (VR), mobile media, interactive software, and immersive media call for significant investment on a yearly basis, and also lead to new forms of expression that must be quickly integrated into curriculum (Krotoski, 2011; Reid, 2011; Howard-Hughes & McLean, 2017).

Rapid change requires a nimble response, which is not always easy in an environment where procedures for curriculum revision, as well as operational and capital planning, must be rigorously followed and can extend over multiple years. Judicious decision-making is also critical in an environment that has seen funding for post-secondary education decline steadily for several decades (Bradshaw, 2013; Canadian Federation of Students, 2013; Canadian Federation of Students - Ontario, 2015; Clark, 2000; Davison, 2016). Media schools will need help in assessing the evolution of the market, and in developing new skill sets in teamwork and project management to quickly identify needs and change direction with limited resources.

This study aims to contribute to the literature and practice that strives to guide academic leaders, and address issues specific to leaders of media production schools and faculties. The leadership of faculty and staff engaged in the delivery of media production curriculum requires tough decisions in a timely manner to ensure the programs for which they are responsible remain relevant and competitive in an area that shows no sign of slowing down. While academic leaders are ultimately accountable for making such decisions, the term “media educators” is used broadly throughout this study to capture all stakeholders with a leadership role to play in addressing the challenge of rapid change. Leadership in this context ranges from institutional vision and guidance at the senior level to academic freedom in the classroom and accurate forecasting of industry trends in relation to both program offerings and capital planning. Administrators, faculty, and staff all play a role.

Effective decision-making in response to rapid change will require a keen understanding of the forces driving the ongoing evolution of media industries, the barriers institutions face in adapting to these changes, and the opportunities that exist for developing new approaches.

Current Environment

Declining Funds for Educational Programs

Declining funds are of particular concern to schools whose media programs offer courses in television, film, and related screen industry production requiring significant investments in physical space and technology. A fully outfitted 4K teaching studio can easily cost in excess of $2,000,000 CAD to equip, and may require more than 3,600 square feet of floor space with a ceiling height of more than 20 feet. Moreover, there are a limited number of student positions available when conducting classes in media production lab spaces, making scheduling of multiple classes for a single cohort a necessity. Multi-camera studio lab classes are of particular

concern, as they require considerable staff support for workshops, technical set up, set construction and design, and lighting. Some programs offer courses with mobile production units in large trucks or trailers, adding automotive operating, maintenance, and storage costs to the tab. While other media courses may prove less expensive from a cost-per-student perspective, the school will nonetheless be required to provide a high volume of portable production equipment and high-end computer labs with expensive design software to meet student needs.

Rapid Change in Technology

Even to the casual observer, the impact of technological advancement on media production and consumption is obvious. Anyone who has purchased a computer, phone, tablet, television set, or gaming system in recent years knows that each year newer models with new features will likely be available. These technologies are also driving change in the way media is produced. Most media projects are now developed as "transmedia", which Jenkins (2011) described:

> In transmedia, elements of a story are dispersed systematically across multiple media platforms, each making their own unique contribution to the whole. Each medium does what it does best—comics might provide back-story, games might allow you to explore the world, and the television series offers unfolding episodes. (para. 2)

Today's media school students must be aware of and competent in the latest storytelling techniques and technologies upon graduation to be assured of employability in the media sector.

Rapid Change in Industry Technique

Beyond the challenge of keeping the institution itself up to date with the latest technology, today's media educators are called upon to prepare graduates for employment in a sector where new forms of media and new roles are constantly appearing. The emergence of

transmedia is a perfect example. A new job title, “Transmedia Producer,” was announced by the Producer’s Guild in 2010 (Jenkins, 2011, para. 1), and yet many media programs are still without a transmedia component.

The Changing Canadian Media Marketplace

Most Canadian media production programs were introduced at a time when the television and film industries were experiencing rapid growth in Canada. For example, Toronto’s Ryerson University, in its original form as a polytechnic institute, introduced a Radio program in 1948, and launched the School of Radio and Television Arts when it added television facilities in 1953 (Ryerson University, 2018). British Columbia Institute of Technology introduced its Broadcasting program in 1964 (Global News, 2014). From the ’50s to the ’90s, Canada saw rapid growth in the television industry, peaking in the ’70s when new television stations opened every year (Canadian Communications Foundation, 2012). In the new millennium, Canada has seen consolidation of media industries on a grand scale. Examples within the past decade include Craig Broadcasting, owners of the A Channel stations and Toronto 1, being purchased by CHUM; CHUM, owners of the City TV stations and several specialty channels, being sold to Bell and Rogers; and CanWest, owners of Global Television and several specialty channels, being sold to Bell (“Media Convergence,” 2010; “Analysis of Corporate Consolidation,” 2007; Tencer, 2012). With accompanying advances in technology, consolidation has led to the loss of many traditional jobs as robotic cameras entered newsrooms, virtual sets replaced set construction and broadband made possible the remote operation of control rooms (Faguy, 2012).

As traditional media opportunities are shrinking, the web introduces many new opportunities. Although the internet is sometimes viewed as the “Wild West” where anyone can launch a media property with an aspiration to international acclaim and monetary success, the

reality is that the major players, such as Disney, Fox, and Apple, moved swiftly to ensure an ongoing position of dominance in the online media market (Durrani, 2011; “Online Media Ownership,” 2006). With the rise of Netflix to dominance in online streaming, both traditional and non-traditional major players are pushing to secure their place in the streaming space, including Amazon, Facebook, and Google, while Disney has secured a controlling interest in Netflix rival Hulu (McLean, 2017; Rodriguez, 2017).

While a winning business model for online media production and distribution remains elusive, a quick surf of the web turns up multiple examples of how digital technologies have expanded the media marketplace, including video on corporate websites, niche market news sites, social media, gaming, blogs, and tweets. Digital technologies also provide for collaboration on media projects around the globe through file sharing and distance communication technologies such as Skype and Google Hangout.

All of this leaves media production educators challenged as to where to prioritise spending and program development. If traditional multi-camera production is dead, why invest in studio facilities? Is a proven camera a better bet than a leading-edge technology that may or may not become an industry standard? What software programs will have the greatest hold in the marketplace in four years’ time?

Statement of Purpose

Very little literature exists on the challenges media programs face in planning to graduate students ready to work in the digital media space. The purpose of this study was to fill a critical gap with regard to the tools leaders of media programs have at their disposal to assess the needs of students and of industry in the rapidly evolving media sector, and to explore strategies for timely revision of curriculum and upgrading of infrastructure to support these needs.

Research Question

While some of the challenges outlined in this document might appear to be simple policy matters—such as deciding to implement an equipment replacement schedule—it is to the broader research question of leadership that this study was addressed.

Research question:

How might media educators improve leadership practice in adapting to rapid change in media industries?

Sub-questions:

1. What are the contributing factors that have made adapting to rapid change in media industries challenging for media educators?
2. How have some media educators made efforts to keep pace with rapid change through their leadership practices?

Overview of Methodology

The issues addressed in this study are pragmatic in nature, taking the form of a real problem that media educators are currently seeking to address (Boisvert, 2012, p. 110). This challenge further supports the choice of a particularistic case study design, examining a practical problem arising from everyday practice (Merriam, 1998, p. 29). An examination of the phenomenon using quantitative methods, coupled with a qualitative study to improve clarity of the results and develop recommendations, fits well with the pragmatist perspective, where there is an opportunity to "overlap and entwine" the results (Boisvert, 2012, p. 111). For this reason, an explanatory sequential data collection approach was chosen, conducted in two phases. A quantitative study utilising questionnaires was conducted first with educators and prospective employers to confirm the researcher's baseline assumptions and determine to what extent the

variables identified contribute to or alleviate the problem. Qualitative methods were employed in phase two, consisting of interviews with a subgroup of educators who participated in phase one to delve deeper into the meaning of the phase one results, and to evaluate approaches to addressing the challenges posed by rapid change. Scholarly research into existing models for leadership, assessment, and planning have also contributed to the findings and recommendations arising from this study, since while there is a deficit of literature specific to media industries, the business and IT sectors have much to contribute in the area of leadership in environments of rapid change.

Rationale and Significance

There are approximately 40 colleges, 30 universities and 25 private institutions in Canada offering media production or media studies programs (Media Job Search Canada, 2018a, 2018b). Informal conversations with deans, chairs, and coordinators of these programs suggested that media school leaders are struggling with decisions regarding resource allocation, from capital spending on facility upgrades, to teaching assistant and lab assistant support, frequency of course offerings, class sizes, new program development, and faculty recruitment. The rapid evolution of technology and storytelling techniques is particularly challenging for these decision-makers, given the aforementioned environment of declining funds and the traditional barriers to change found in post-secondary institutions such as tenure, tensions between research and teaching, and sluggish administrative processes.

Role of the Researcher

With over 30 years of experience producing media properties and teaching media production techniques, I have seen first-hand, and discussed with my colleagues, the evolution of media technologies and techniques, and shared in the tough decision-making process regarding

future directions. At best, most of these decisions are little better than guesswork, sometimes leading to the failure of new programs and the rapid obsolescence of newly acquired equipment. It is in the role of both media professional and educator that I bring passion and expertise to the topic at hand. My intended role in this research project has included actively participating in the development of data measurement instruments as well as conducting interviews. These are both areas in which I have previous experience.

Researcher Assumptions

The sense of urgency underlying this study was based on several assumptions by the researcher:

- The rapid pace of innovation in media technology, and resulting impact on storytelling technique, will not only continue, but will most likely continue to increase in coming years.
- Government funding of post-secondary education will continue to decrease or, at the most, plateau in the future.
- While improvements in media technology result in more affordable equipment yielding better results, leaders of media programs will continue to be challenged by the diversity of new media technologies, and the associated costs of running courses in multiple media disciplines.
- Barriers to change in the educational sector are likely to remain well into the future, and leaders of media programs will need effective strategies for managing change within current environments.

Definition of Terminology

The following definitions of terminology describing technologies and production techniques in media industries are provided for clarity where industry-specific terminology is used in this dissertation:

- Multi-camera: a production process whereby multiple cameras are used simultaneously to cover an event or produce a TV program in a live or seemingly live manner.
- Single camera: as the name suggests, single camera production typically involves shooting a scene with a single camera multiple times from several angles, and then editing the scene together to make it appear as though all the camera angles were shot as the action unfolded.
- High Definition (HD): a term used to describe any modern TV production or flat screen TV where a very detailed image is created or displayed. HD TVs generally display a wider picture, and clearer image than the Standard Definition (SD) TVs popular from the ’40s through to the early 2000s.
- Ultra-High-Definition (UHD): the next generation of HD, effectively doubling the detail found in HD video. The term 4K is also used for this level of detail, based on the approximately 4000 pixels or dots making up the horizontal width of the image.
- High Frame Rate (HFR): shooting film or video production at a higher rate of still images per second than industry standard. Feature films are typically shot at 24 frames per second (FPS). Director Peter Jackson shot the film *The Hobbit* at 48 FPS.

- Augmented Reality (AR): a device with a camera is aimed at a scene by the user while software displays additional imagery as though it were part of the scene. Pokémon Go is an example of AR.
- Virtual Reality (VR): hardware and software that allow the user to participate in a digital environment in real time. Examples range from the 2D simulated world of Second Life to elaborate 3D environments experienced with a headset.
- 360: a camera and editing system that allows real world recording in 360 degrees to be experienced with a VR system using a headset.
- Artificial Intelligence (AI): the next stage in computing, where machines learn and adapt in response to new stimuli. AI is infiltrating media production having been used to assist in editing scenes from a feature film to be used in a trailer (promotional spot).

Organisation of Dissertation

The initial chapter of this dissertation introduces the research problem as the challenge that media production educators face in keeping pace with rapid change in media production technologies and techniques and the evidence supporting this position. A comprehensive literature review follows, delving into available research on the problem itself, related work in other fields, and the aspects of post-secondary institutional life that impact the process of adapting to change. Chapter 3 explains the choice of a particularistic case study design for this study and describes methods for data collection and analysis as well as means of assuring the integrity of the study.

The final three chapters report on the findings from the study, provide a discussion and synthesis of the results, and offer a conclusion and recommendations. As the explanatory

sequential approach entails both quantitative and qualitative research, the study was conducted in two phases, with the quantitative results from the first phase providing context for the second phase. As a result, the reporting, analysis, and synthesis of the results required comprehensive examination of the results of both phases of the study as well as the meaning extracted from phase one results during phase two of the research. It is hoped that the conclusions and recommendations arising out of this study will provide valuable advice to media educators in maintaining currency in the rapidly evolving industries of media production.

Chapter 2: Literature Review

A review of the literature suggests that there is little in the way of pre-existing scholarly work on the topic of the challenges media schools face in keeping pace with rapid change in media technologies and production techniques. For this reason, this chapter focusses on literature that addresses complementary topics where research and findings may prove informative.

The review is broken into three sections. The first is an examination of some of the key challenges post-secondary institutions with media production programs face in dealing with rapid change in media technologies and techniques. In this section, evidence in the literature is used to validate the researcher's claims concerning the scarcity of scholarly work on the topic, as well as to illustrate the researcher's position concerning the challenges posed by the rapid evolution of media technologies and techniques, and aspects of the post-secondary environment that make meeting those challenges difficult.

The second section discusses the possible means of addressing these challenges and aims to provide a synthesis of findings concerning these topics as they relate to the research problem. The discussions regarding barriers to enacting change in the educational sector are derived from scholarly works on the role of the university, while potential models for a more adaptable, nimble educational environment are drawn from current debates regarding quality assurance in education, tensions between teaching and research, and the pros and cons of three-year degree programs.

The role of leadership is discussed in the third section. As noted in Chapter 1, administrators, faculty, and staff supporting media production programs all have a leadership role to play in keeping pace with rapid change. At the senior level, academic leaders are ultimately accountable for achieving outcomes related to keeping pace with industry. In this

section, research on change management and leading change is reviewed for its relevance to the leadership challenge of keeping pace with rapid change in media technologies and production techniques.

A description of the conceptual framework for the study concludes this chapter.

Key Challenges to Keeping Pace with Rapid Change

Keeping Pace with Technology

We need only look to research conducted in the Information Technology (IT) sector to understand exactly how rapid the pace of technological advancement has become. “Lengthy acquisition and implementation processes can date many ITs before ever substantially contributing to their intended purpose. A new IT can, in fact, even become obsolete before it is ever implemented" (Benamati & Lederer, 2010, p. 2). Even in this area, however, there may be little advice to be found for educators in dealing with rapid change, as “Little research has directly addressed the effects of changing IT on IT management, and how IT management copes with them" (Benamati & Lederer, 2010, p. 2). What research does exist focusses on the impact of rapid change on IT project management rather than long term planning and maintaining currency on a day-to-day basis. Durney and Donnelly (2015) noted this distinction and its impact on individual project management.

> Rapid changes in technology—changes that have their source far beyond the reach of any individual project—can create significant uncertainties for IT projects and blindside even the most seasoned project manager. Managers of projects that are especially susceptible to the effects of rapid technological change need tools beyond the traditional project management methods to help them deal with the uncertainties that the pace of technological change can create. (p. 642)

While Benamati and Lederer (2010) did not prescribe specific approaches to dealing with rapid technological change, they did identify a number of coping mechanisms used by IT companies grappling with various challenges associated with those changes. For example, in dealing with the integration of new equipment and software, IT managers frequently turn to consultant and vendor support rather than internal procedures (p. 10)—an approach that might be valuable for educational institutions in bringing staff and faculty up to speed on new digital media IT. Interestingly, Benamati and Lederer (2001) found that internal procedures were more effective than consultant support in dealing with integration issues, earlier research contradicted by their later findings (p. 106). Perhaps the pace and complexity of technological evolution has increased so much that internal procedures are no longer sufficient to address IT change issues, and/or vendor and consultant support has improved dramatically in response to customer need.

Keeping Pace with Industry

New areas of media production such as transmedia and its subcomponents of online media and game development call for a more complex range of skills than is to be found in the existing curriculum of most post-secondary media programs with a history in traditional media. Riismandel (2008) questioned how well existing programs prepare students for careers in these areas:

> Success in the internet environment is often based on having a broad skill set and the ability to serve multiple roles, especially when one works for a small internet company. At a large broadcaster or major film production company, one can afford to specialize in writing, editing, or cinematography. But that luxury doesn't exist at startups, and it's already disappearing at larger companies….

> There's an increasing need for online media producers to have design expertise, business acumen, and some essential understanding of IT, especially internet and networking technology. (p. 78)

Zyda (2006) similarly found that a diverse skill set is required by students entering the world of game design, and argued for cross-disciplinary programs combining computer science, art, and design:

> The hiring requirements at Electronic Arts, a game-publishing industry leader, are something on the order of 65 percent computer scientists, 30 percent artists, and 5 percent designers. So we imagine that game development degree programs that satisfy each of these demand areas are in order. (p. 30)

Using the example of the University of Southern California (USC) Computer Science Game Development program, Zyda (2006) argued that the answer lies in customising computer science programs to allow for the integration of core and elective courses from art and design programs, in this case supplied by USC's School of Cinema Television.

Gross and Do (2009) likewise agreed that "designers of the future—the New Makers—will need to be fluent with the materials and processes of computation, in addition to the materials and processes of other domains" (p. 215). However, Gross and Do argued that the better plan is to modify or customise game design streams in traditional media programs to integrate computer science courses:

> We find that it is easier for design students to acquire the technical skills (programming, electronics) they need to carry out projects with a computational component than for engineering and computer science students to acquire the mindset needed to work in ill-defined situations. (p. 214)

While they differed on recommended solutions, Zyda (2006) and Gross and Do (2009) seem to have agreed that many of today's digital media programs do not adequately prepare students for careers in digital media, and that change is needed in both curriculum development and inter-departmental relations to adapt to the rapid evolution of media technology and production techniques.

The Static Nature of the Post-secondary Environment

To fully appreciate the challenges post-secondary institutions face in adapting to the rapid pace of evolution in technologies and techniques in the digital media sector, it is necessary to examine the history and evolution of post-secondary education itself. Wernick (2006) traced the pursuit of knowledge from its pre-Plato roots in Greece, Egypt, and India through to the explosion of online universities and distance learning made possible by technological advancement in the 21st century. Wernick portrayed the early university as being the domain of the elite, primarily occupied with the pursuit of knowledge, and noted a significant shift in the late 20th century, mostly demonstrated through the dramatic increase in universities, credentialed occupations, and student participation rates.

> Taken as a whole…the academic institution has lost its elite and quasi-autonomous status to become, in its lower reaches, a continuation of mass secondary education, and in its highest reaches, the home of the expert culture in a post-industrial economy. (p. 561)

For the most part, the evolution of the university to a more student-centric, vocationally focussed institution has probably been a positive development for students in media studies, for whom critical thinking and the pursuit of knowledge align with practical training and the pursuit of employment. In general, however, the university remains a slow-moving entity, limited by "hangovers" from its early roots and evolutionary steps on the road to modernisation. Archaic

structures make nimble adaptation of curriculum challenging. Tensions between the priority of research and of teaching continue to eat away at the prioritisation of student success. Tenure, with its assurances of job security, raises concerns about the motivation and ability of long term faculty to keep pace with the rapidly evolving industry landscape.

While progress has been made in teaching and learning, the nature and structure of the university continues to pose challenges to meeting the needs of students and employers in the rapidly changing digital media environment. Media production programs include significant components of vocational training, with the intent of exposing students to current technologies and techniques. Describing universities as "far from agile," Tsichritzis (1999), noted that:

> Universities package content very conservatively. Degrees and degree requirements make course programs inflexible and programs reflect the university structure, which is difficult to change. Professors' qualifications, research capabilities, and sometimes positions (chairs) make courses very static. (p. 95)

This lack of agility and conservative packaging of content can frustrate the efforts of media educators who are focussed on graduating students ready to enter a rapidly changing industry.

The Impact of Research/Teaching Tensions

The roots of tension around the priority of research versus teaching were traced by Wernick (2006) as far back as the third and fourth centuries BCE, with the foundation of schools in Greece and the establishment of "the basic matrix—higher education combined with advanced research" (p. 558). Wernick noted that "the distinction between *universitas* and *stadium generale* cuts across the distinction between teaching and scholarship/research" (p. 558), and that the relation between these two core functions of the university is problematic. "On the educational side, undergraduate education—regardless of the actual destination of the students—has tended

to assume the form of an apprenticeship in the knowledge product within the university." (pp. 558–559)

The Bologna reforms of 1999 attempted to address the secondary importance of teaching in the context of the growing need for attention to quality assurance in teaching and learning in higher education (Reichert, 2010). Reviewing the repercussions of the Bologna reforms at a 10-year interval, Reichert (2010) found that:

> All in all, the intended effects of the Bologna reforms have been slowest where hopes were highest, namely in the planned widespread reforms of teaching quality and approaches (competency and learning outcome orientation), since these involve attitudinal changes rather than mere changes of procedures and structures. (p. 13)

If the pace of reforms in teaching practice is lagging, as the legacy of the Bologna reforms would seem to indicate, it may be prudent to review to what extent concentration on research may be holding back teaching and learning development from matching the media studies evolution.

The Impact of Tenure

While much maligned as a system of academic job security, tenure also arises from the early history of the university as the seat of knowledge, and "is rooted in three ancient and persistent academic desires: for intellectual independence, collective autonomy and the time and financial security needed to carry on scholarly and scientific work" (Horn, 1999, p. 261). However, in the context of Wernick's (2006) depiction of the evolution of the university to a modern, teaching-focussed, vocationally-oriented institution, it does seem appropriate to question a job protection system that uses academic freedom in research as its key defence.

Horn (1999) lays out five common "attacks" on tenure, all of which resonate with the issues in media studies:

> First: tenure has an unwholesome effect on professorial creativity and integrity. Second: tenure encourages indolence. Third: tenure reduces institutional flexibility at a time when universities need to respond to rapid change. Fourth: not being available to other classes of workers, tenure gives professors an unfair degree of security. Finally: tenure gives universities a bad image. (p. 272)

Those who continue to defend tenure assert that "academics need freedom from the fear that they may be dismissed for their opinions" (Horn, 1999, p. 275) and that "it is necessary to attract the intellectually gifted to the academic life and to create conditions that allow first-rate scholarship to flourish" (Horn, 1999, p. 275). The latter in particular is a reasonable defense in the context of Wernick's (2006) description of the modern university as existing in a highly competitive environment. And yet Horn (1999) also noted that:

> Even academics who support the institution of tenure have expressed scepticism about the way it often functions. A major criticism has been its alleged role in providing continued employment to the mediocre and in denying it to those who might do a better job. (p. 277)

Horn (1999) concluded that "however imperfect it may be, tenure in its present form serves the long-term interests of the universities and of wider society better than any alternative that has been proposed" (p. 278), but at the same time allowed that "it may be necessary to monitor tenure more carefully to demonstrate to observers that those who enjoy its privileges continue to deserve them" (p. 277).

The impacts of post-secondary institutional bureaucracy, research/teaching tensions, and tenure on the ability of media educators to remain current with industry is a topic worthy of further discussion. If review and revision of curriculum requires several years to implement, new

technologies and techniques will already have emerged by the time changes appear. If Reichert's (2010) observations regarding the slow pace of attitudinal change toward the importance of teaching and learning are accurate, faculty may not apply the required urgency to meeting the challenge of rapid change. And while tenure may play a role in attracting top faculty and ensuring first-rate research, if there is any truth to the criticisms of reduced flexibility and faculty performance, this too may be worthy of examination.

Discussion of Possible Approaches to Dealing with Rapid Change

The environmental conditions outlined at the outset of this paper—declining funds, rapid technological advancement and the evolution of media industries—are the "new normal." Change in program structure, teaching practice, and faculty attitude may all be required to ensure that post-secondary institutions with media programs will be able to graduate students ready to hit the ground running in their chosen field. What can leaders in higher education learn from the literature about potential approaches to addressing these challenges?

Three-Year Degrees

One highly debated proposed solution to the many issues facing today's universities is the move to three-year degree programs. With the rapid pace of evolution in media industries, a shorter term of studies may serve as a means of ensuring that first-year foundation courses remain relevant and applicable upon graduation and entry to the work force.

Much of the literature in favour of three-year degree programs centres around two rationales: (a) the three-year degree is already standard in Europe, as a result of the Bologna Reforms (Riechert, 2010), and (b) the historical rationale for a four-year degree program, the "custodial care" required for complete student development, is no longer required due to improvements in secondary education over the course of the 20th century (Walker, 1974). The

latter sentiment is echoed by Perrin (2010): “Many students now enter college highly motivated, tech-savvy, and having completed several college-level courses in high school” (p. 22). Walker (1974) also noted:

> Today, with an open-door admissions policy, not only do we attract the 18-year-old, but also the 30-year-old, the 40-year-old, and the 50-year-old. Many people who have been working for a number of years now want to further their education. How much custodial care does the 28-year-old factory worker need who wants to finish a degree he started 10 years ago? (p. 274)

Both of these arguments are relevant to media studies, where students fresh out of high school frequently arrive with portfolios of creative work, and mature students already engaged with technology seek to transition to media studies.

Marcy (2010) rejected the notion that today’s students no longer require “custodial care,” and suggested that “the reality is that the core work of higher education, the work of student learning, is not efficient” (p. 52). Marcy also noted “the growth of technology, the reality of internationalization, and the breadth of information necessary for reasoned judgements in our society is expanding, not contracting” (p. 54) as a rationale for reconsidering accelerated degree programs, an aspect that is worthy of consideration for media educators**.**

The other major argument waged against three-year degree programs is the potential loss of general education courses meant to stimulate critical thought and analysis.

> There is a very real danger that such proposals can undermine the already threatened core liberal arts; such proposals circumscribe the breadth and depth of learning, as well as the intellectual and social development of students, that are central to college education. (Marcy, 2010, p. 52)

Walker (1974) similarly warned that:

> We soon reach the point where specialized training can be defended but the general education cannot. When the cut in the curriculum comes, it will be then at the expense of general education because it has no vocal defense. (p. 273)

Bok (2010) agreed that "the most likely cuts… will come in general education requirements, where students can learn a foreign language, develop writing skills, encounter other cultures, study ethics, and broaden their interests by exploring literature and history" (p. 22). Bok also added this blunt warning: "Students may discover that a three-year B.A. is worth less in the marketplace" (p. 22).

On balance, Riechert (2010) and Perrin (2010) have offered compelling arguments for shorter degree programs with less custodial care, particularly in media production where students are more likely to arrive with the high levels of motivation, tech-savvy and prerequisite learning that Perrin describes. However, the warnings of Marcy (2010), Walker (1974), and Bok (2010) should not be ignored in the process of curricular review, as employers of media students typically expect a level of world knowledge, communications skills and maturity that general education courses can help develop. The pressure of a rapidly changing workforce and the changing demographics of incoming students suggest that accelerated degree programs have a place in media production programs, while efforts should also be made to maintain a general education component.

Loosening Up University Structure

Although Tsichritzis (1999) has identified this as difficult to achieve, some loosening of university structure may create opportunities for addressing the rapid evolution of media industries. Like Zyda's (2006) USC example cited earlier, where Computer Science Game

Development students took courses in the School of Cinema Television, Tsichritzis (1999) recommended sharing the workload, but on a global scale.

> The ability to combine local plus imported content from different areas in an attractive program for students is certainly rare today. Universities need a dynamic definition of their programs to fit students' interests. The universities that respond the fastest with the best programs will have a tremendous advantage, especially in life-long learning where the needs of the students evolve with their careers. (p. 96)

Tsichritzis (1999) provided an example where virtual technology expanded the classroom globally to access subject matter experts from around the world as lecturers and discussion leaders. At the same time, Tsichritzis acknowledged that:

> Despite the increasing role of digital technologies, a university cannot be completely virtual. There is a need for local animators/facilitators who answer questions, organize exams, give feedback, occasionally offer a back-up service, and generally follow up students and deal with their daily problems. (p. 97)

Tsichritzis' approach has relevance for media studies in that while the actual practice and execution of media production must naturally happen on a local level with on-site supervision, access to leading writers, producers, and directors is not readily at hand on every campus. Tsichritzis' model also pointed the way for joint ventures and partnerships where "lead" faculty of a top tier university might set and deliver curriculum for partner schools, to be executed locally.

On the local level, Tsichritzis (1999) advocated redirecting the efforts of long term faculty to content creation, while those with short term appointments package courses; or perhaps outsourcing course packaging to leave short term faculty free to teach (p. 100).

Universities may also need to be bold in assessing their capacity to deliver an effective media studies curriculum when faced with the daunting challenges of rapid change.

> Universities cannot afford to be all three: production, programming, and distribution centers in all scientific areas. There is too much duplication and too much inefficiency inherent in the system. In the inevitable global competition, universities will be exposed to tremendous pressures. Therefore, they need to choose their roles very carefully and concentrate on what they consider their key sectors. (Tsichritzis, 1999, p. 100)

Less Focus on Research

As noted earlier, the effects of the Bologna Reforms on teaching quality have been slow to materialise (Riechert, 2010). By comparison, an "area in which remarkable momentum has been achieved is that of doctoral education. This area was given policy prominence because of the increased attention on Europe's international research competitiveness" (Riechert, 2010, p. 12). Research still plays a considerable role in the classification of universities (Denman, 2005). To what extent, though, is research important in the general definition of a university, and for more vocationally focussed programs such as media studies, when weighed against teaching?

Denman (2005) defined a university as "a complex higher education organisation that is formally authorised to offer and confer advanced degrees in three or more academic disciplines or fields of study" (p. 19). Denman clarified that the omission of the word "research" from his definition is not accidental. "It is understood that, although research plays a critical role in any university, in most institutions *it does not serve as its most basic function* [emphasis added]" (p. 19). Tsichritzis (1999) questioned the ongoing relevance of research to the pursuit of knowledge, noting that "governments frequently question the economic value of academic research.

Meanwhile, companies are buying only relevant research and only from the best or the cheapest worldwide" (p. 93).

One might infer from the work of Riechert (2010) and Denman (2005) that the apparent ongoing prioritisation of research over teaching is holding back improvement in teaching, particularly in vocationally focussed media programs, if that research is not advancing critical thought in the analysis of media properties. On the other hand, given Tsichritzis' (1999) comments regarding the value of academic research to government and industry, perhaps it is a question of the type of research conducted. It may be that applied research would have greater value in the media production field and would connect more directly to learning outcomes that will serve students well in a rapidly evolving media landscape.

Teaching Digital Literacy

There is a perception among some media production program faculty that today's students, having grown up surrounded by digital communications technology, have an innate ability to adapt to new technologies and processes and are in no way disadvantaged if they are not taught the latest technologies or techniques. The perception finds its roots in the theories of Tapscott (1998; 2009) and Prensky (2001a; 2001b), who postulated that the generation coming to maturity at the turn of the 21st century was fundamentally different from its predecessors in that it has grown up in a fully digital era.

Tapscott (1998) referred to the upcoming generation as the Net Generation or "Net Geners." Prensky (2001a) labelled this cohort Digital Natives, recognising their familiarity and comfort with digital technology, and those who came before as Digital Immigrants, who struggled with digital language and culture. Tapscott (2009) illustrated the divide with his observation, "You talk on the phone and check your e-mail; to them e-mail is old school. They

use the phone to text incessantly, surf the Web, find directions, take pictures and collaborate" (p. 9).

While popular with the public, press, and scholars alike, Tapscott's (1998; 2009) and Prensky's (2001a; 2001b) theories have been challenged by several scholars as being poorly researched, with many citing their own research to the contrary (Baker & Lovell, 2009: Bennett & Maton, 2010; Bullen, Morgan & Qayyum, 2011; DaCosta, Kinsell, Nasah & Seok, 2010; Smith, 2012; Thompson, 2013). DaCosta et al. (2010) agree that "Today's youth have been exposed to technologies never before seen" (p. 550). However, their own research suggested that "age, gender and socioeconomic status together make a significant contribution towards one's digital propensity" (p. 550). Bennett and Maton (2010) concurred that "while some young people might be regarded as 'digital natives', these are by no means characteristics shared by all young people simply because of their exposure to digital technologies" (p. 325).

A study by Thompson (2013) suggested that, like generations before, Digital Natives learn only what they need to learn about new technologies to maintain an active social life, limiting most of their use to "rapid communications and web resources" (p. 20). Thompson described the latter as texting, social networking, streaming online content, and using search engines to look up topics of interest. Thompson added:

> Claims often made in the popular press suggest that if teachers give the students game-based lessons or technology intensive project assignments, not only will the students be highly motivated, but they will also be proficient and self-directed in their use of technology... [however] the data here suggest that this is not the case for many digital natives. (p. 20)

Bennett and Maton (2010) reported similar findings:

> Content creation activities (as measured by items such as creating text, graphics, audio or video) are consistently lower than might be anticipated given many claims about what young people are doing with technology. In fact, with the exception of social networking, most activities associated with Web 2.0 are engaged in by a minority of correspondents on key large-scale surveys. (p. 324)

The latter comment is significant for educators in media production programs who might expect that today's Digital Natives enter these programs already familiar with the basics of media production. While some students will undoubtedly have dabbled in media production, the mere exposure to digital technology in daily life does not appear to replace the need to teach incoming students the fundamentals of production technologies and techniques. On the contrary, Thompson (2013) suggested that "digital native students may need scaffolding from teachers before they will go beyond the rapid communication technology they are most comfortable with and learn the wide variety of technology tools that are important for productivity in school and the workplace" (p. 23). A study by Baker and Lovell (2009) would seem to reinforce Thompson's comment, and put to rest the idea that Digital Immigrants are ill-equipped to teach digital technology. Baker and Lovell found that students tasked with creating a digital narrative for an assignment (including video editing and web authoring) went to their Digital Immigrant professors for assistance rather than utilising online resources. "Once support was received, students returned to the task, met the challenges it offered and retrospectively found the group work and demands of creating a digital narrative rewarding and satisfying" (Baker & Lovell, 2009, p. 58).

Regardless of whether or not incoming students have a particular propensity for working with digital media technology, the challenge remains to teach technology in a manner that is

useful, given that current technologies and techniques taught in introductory courses will be out of date by the time the student graduates in three to four years' time. Ng (2012) suggested the solution is to teach digital literacy rather than familiarity with any one particular technology. Ng defines digital literacy as the ability to embrace "technical, cognitive and social-emotional perspectives of learning with digital technologies, both online and offline" (p.1066). Ng further explained that the "digitally literate individual should be able to adapt to new and emerging technologies quickly and pick up easily new semiotic language for communications as they arise" (p. 1066).

The Learning Organisation

To meet the needs of students and industry in a rapidly changing environment, universities may need to evolve from teaching organisations to learning organisations (LOs). Pedler, Boydell, and Burgoyne (1989) defined an LO as: "an organisation which facilitates the learning of all of its members and continuously transforms itself" (p. 2). For faculty, being part of an LO may mean a more active response to student feedback and taking part in professional development (PD). Van Note Chism, Lees, and Evenbeck (2002) noted that "in a way, the work of faculty development has become more in harmony with the learner-centered education being promoted for students" (p. 34).

Van Note Chism et al. (2002) recommended reflective practice and communities of practice as tools for improving teaching and learning. In reflective practice, faculty continually introduce new curricular content and practice in a cycle of planning (preparing curriculum), acting (implementation in the classroom), observing (testing, conducting student evaluations), and reflecting (analysing results for further refinement, development or abandonment) (p. 37). A community of practice effectively expands on the personal reflective process and has three

essential features: “a set of issues, a group of people who care about these issues, and an interest in arriving at a shared approach to being effective actors within the context of these issues” (p. 38).

> Communities consist of *a core group* of people who help to identify and define the dimensions of issues, *an active group* that participates in the dialogue initiated by the core group and *a peripheral group* that sits on the outside but, despite limited direct participation, may gain from the discussion. (p. 38)

Huston and Weaver (2008) suggested that one size does not fit all when it comes to PD for faculty, asserting that older, more experienced faculty (generally tenured) have different needs from their younger or less experienced colleagues. Noting that faculty development programs are typically developed with less experienced faculty in mind, Huston and Weaver (2008) asserted that mid-career and senior faculty are not well served, and as a result are reluctant to take part in faculty development programs (p. 7). Huston and Weaver promoted peer coaching as a means of engaging and involving tenured faculty, as “peer coaching, especially reciprocal coaching, is more likely to meet the needs of experienced faculty than general faculty development events because coaches can talk intensively about teaching with someone who has similar levels of experience” (p. 10). Such an approach may work well for media schools in addressing concerns about complacency toward quality teaching and learning by tenured faculty and those distracted by research/teaching tensions.

Scott and Dixon (2009) likewise found that academics are sometimes reluctant to buy into PD initiatives, often claiming skepticism of the value of student feedback because of a lack of competence in the area of evaluation or partiality based on the popularity of certain instructors. Scott and Dixon proposed a coordinated approach based on a research project where

data from student feedback was collected and analysed in light of ongoing PD initiatives designed to address student concerns. Media schools may value a coordinated approach, particularly as a means of discerning the validity of student response if, for example, a faculty member appears to be out of touch with a particular technology that is not relevant to the faculty member's area of concentration.

For media schools aiming to remain current in a rapidly changing environment, a nimble response, including the ability to constantly improve the quality of teaching and learning, is critical. Scott and Dixon's (2009) coordinated approach, Huston and Weaver's (2008) work on peer coaching and Van Note Chism et al.'s (2002) recommendations on reflective practice all have the potential to serve Pedler et al.'s (1989) definition of an LO. Media educators can benefit from a closer examination of student evaluations as they relate to PD activity balanced with reciprocal peer coaching, as part of an ongoing cycle of planning, acting, observing, and reflecting for improved performance.

The Question of Leadership

A discussion of challenges facing leaders of post-secondary media programs, and the potential means of addressing those challenges, would be incomplete without an examination of the role of leadership itself. Inevitably, such discussions lead to the question "What is leadership?" Vroom and Jago (2007) offered the following succinct definition: "We see leadership as a process of motivating people to work together collaboratively to accomplish great things" (p. 18). This definition has relevance for leaders of media production programs, who must surely motivate diverse stakeholders to find solutions to the escalating challenge of rapid change.

There is a significant body of work on planning, strategy, and leading change in the business sector: this includes Beerel (2009), Orridge (2009), Whittington (1993), and most notably seminal publications by Kotter (1995), outlining eight steps to leading change; Porter (1996), who defined strategy in terms of differentiation and competitive advantage; Christensen (1997), who discussed sustaining and disruptive innovation; and Heifetz and Laurie (1997), who provided a six-step model for adaptive leadership. Directed at the private sector, these works speak to the need for response to competitive challenges dramatically impacting the profitability or market dominance of a particular player. While public post-secondary institutions do not share these challenges to the same extent, models developed in the business sector have given rise to similar works aimed at the academic sector (Christensen & Eyring, 2011; d'Ambrosio & Ehrenberg, 2007; McRoy & Gibbs, 2009; Smith, 1996).

There are certainly useful lessons and tools for leaders of media programs to be found in change management literature, particularly with regard to specific change initiatives within the organisation. Leading change at the system level is beyond the scope of media educators as defined in this study, and as such, these systemic issues have been examined in the context of their impact on keeping pace with persistent change and how best to work within the system to ensure ongoing relevance in terms of curriculum and technical resources. Beyond the discussion of strategies and tactics aimed at achieving better outcomes in capital planning and curriculum development, the question of leadership style is relevant in motivating faculty and staff and facilitating decision-making that better responds to keeping pace with rapid change.

The academic sector has been late to the table in investigating the role of leadership within its own territory. Upon researching the question "What styles of, or approaches to, leadership are associated with effective leadership in higher education?" Bryman (2007)

concluded, “There is surprisingly little empirical research addressing this research question” (p.693). However, the subject of leadership in general has been studied extensively for many years by the business and behavioural sciences sectors, as demonstrated by Fiedler’s (1967) study of the effectiveness of relationship-motivated leaders versus those who take a more task-oriented approach in eight different situations. “Fiedler found that the relationship-motivated leader outperformed the task-motivated leader in four of the situations, but that the reverse was true in the other four situations” (Vroom & Jago, 2007, p. 20). This suggested in this early study that different leadership styles can be more or less effective in different situations.

Research conducted since Bryman’s (2007) observation has suggested that leadership does have an impact on a school’s performance (McRoy & Gibbs, 2009; Scott & Dixon, 2009). While there is much discussion in the literature as to which leadership styles and models provide the best fit with the needs of educational institutions, there is a general consensus that responsibility for leadership does not rest with one individual (Burke, 2010; McRoy & Gibbs, 2009; Spillane, 2005). Burke claimed that the “concept of shared governance in the organisation and management of higher education naturally aligns with distributed leadership” (p. 25), a model typically defined by a flattened hierarchy and decentralised decision-making. While Harris and Spillane (2008) observed that there is “a powerful relationship between distributed forms of leadership and positive organisational change” (p. 32), Burke noted that the distributed leadership model provides “direction to the human capacity-building needed for *efficient and effective* [emphasis added] practice that will *preserve and develop* [emphasis added] the values of shared governance” (p. 54). Burke’s description suggests that distributed leadership may lend itself more to the management practice of operations and maintenance than to the practice of strategy and vision typically associated with leadership (Kotter, 1999; Marshall et al., 2011).

Burke's (2010) comments also suggest that a distributed leadership model may align more with a transactional, rather than a transformational, leadership approach. According to Smith and Bell (2011):

> Transactional leadership focuses on the interaction between followers and leaders who, in turn, directly affect the behaviours of followers….
>
> As Bass and Riggio (2006) note, transactional leadership has two main factors: contingent reward and management-by-exception. Contingent rewards require subordinates to reach agreed levels of performance, whereas management-by-exception is used to intervene whenever standards are not met. (p. 58)
>
> Transformational leadership, on the other hand, has the potential to change the very culture of the organisation, helping shape and develop it as environmental requirements change. Rather than measuring performance, the transformational leader inspires and motivates followers, demonstrating the importance of satisfying higher-order growth needs (Bass & Riggio, 2006), fostering a desire to improve and achieve and demonstrating qualities such as optimism, excitement about goals, a belief in a future vision, a commitment to develop and mentor followers and an intention to attend to their individual needs. (p. 59)

Bass (2000) saw transformational leadership as a good fit for the needs of LOs. However, he cautioned that "Leadership can also be transactional. The good leader of the learning organization will be both, but more transformational" (p. 21).

McCaffrey (2010) likewise asserted that, regardless of the organisational structure or leadership approach adopted,

> Effective management—one that harnesses the commitment and skills of all staff—is contingent upon getting the 'fit' between management style and organizational right. That is, ensuring that the management style—whether it be formal, rational, consensual, hard-driving or political—harmonizes with, rather than rubs against, the distinctive character of the institution. (p. 37)

The research suggests, then, that although the management structure of post-secondary institutes lends itself readily to distributed leadership, as Burke (2010) demonstrated, this is not necessarily the best model where a nimble response to a rapidly changing environment is required, given distributed leadership's operational orientation and close alignment with transactional leadership. The transformational model promoted by Bass and Riggio (2006) would seem to provide a better fit where inspirational leadership is required to motivate staff and faculty to constantly reinvent themselves and the organisation in response to the rapidly changing needs of students and employers. It is also worth noting Bass's (2000) position regarding the suitability of transformational leadership for LOs, the value of which was discussed in the previous section of this paper. While the literature demonstrates the value of both transactional and transformational leadership, depending on individual situations, transformational leadership would seem to be the preferable overall approach to addressing the challenges media educators face in the wake of rapidly evolving technologies and techniques.

Conceptual Framework

While it is hoped that this research will prove valuable to educators in media programs in their planning and decision-making around curriculum and infrastructure, the contexts within which these decisions must be made are subjective and variable, requiring meaning to be constructed in both development and execution. The epistemology underlying this research

initiative is therefore constructionist, relating as it does to human practice within the social context of the post-secondary educational system. This fits with Crotty's (1998) definition of constructionism.

> The view that *all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially human social context.* (p. 42)

The theoretical perspective guiding this research is interpretivist, specifically pragmatism. This study wades into turbulent water, where academics are already engaged in seeking solutions. This aligns with the pragmatist viewpoint that "philosophers… need to begin from where they are, within an already occurring stream of activities" (Boisvert, 2012, p. 110). Furthermore, the need to develop a practical solution fits with the notion that "to count as Pragmatist, a position must not only make good reasonable sense. It must also incorporate a *solvitur ambulando* dimension, paying attention to the actions as well as thoughts" (Boisvert, 2012, p. 108). Finally, the pragmatic outlook supports the constructionist epistemology.

> These processes provide the contexts that occasion the responses of questioning, inquiries, projects. *Pragmata* are not neutral and value-free. They come with markers, indications, ranges of possibilities. Knowing and doing—here is a familiar Pragmatist theme—overlap and intertwine. (Boisvert, 2012, p. 111)

Boisvert's (2012) description aligns well with the need to "overlap and intertwine" (p. 110) data combed from scholarly sources, databases, interviews, questionnaires, and personal experience in the field. The conceptual framework of this study considers the overall problem of maintaining currency in media production programs in light of rapid changes in media

production technologies and techniques. Addressing the problem requires an understanding of the demands placed on educators as a result of such rapid escalation, and the key challenges in meeting those demands.

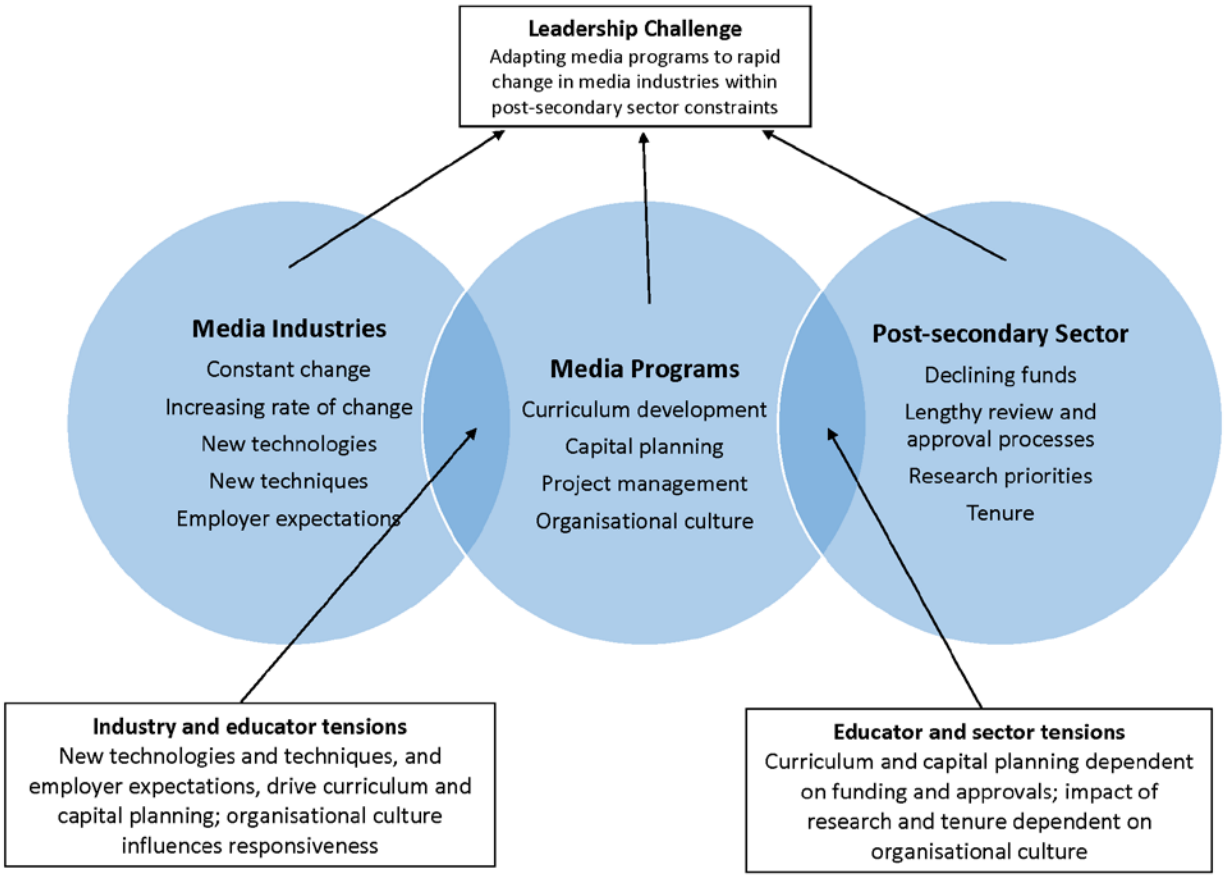


***Figure 1*. Conceptualising the leadership problem in media production programs**

Figure 1 illustrates the leadership challenge as being one of adapting organisational culture and planning processes in media programs to better deal with the pressures of keeping pace with rapid change in industry, while operating within the limitations of declining funding and bureaucratic processes in the post-secondary sector. Reflective of Boisvert's (2012) observations, this is where media educators find themselves today, within the already occurring stream of activities required to maintain currency while planning for the future amid tensions arising from the pressures applied by industry and the post-secondary sector on either side.

Employer and educator tensions arise from the intersection of media industries and media programs, where pressures of constant and increasing change are driven by the rapid evolution of technology and the new production techniques and forms of storytelling that are emerging from that evolution (Eeden & Chow, 2018; Jenkins, 2011; Krotoski, 2011; Reid, 2011; Hernandez, 2017; Howard-Hughes & McLean, 2017). For media educators, this challenge extends to satisfying the needs and expectations of employers in recruiting graduates with the knowledge and skills required to be successful in today's media industries (Carbone & Ware, 2017; Davies, Fidler, & Gorbis, 2011; Gross & Do, 2009; Molebash, 2009; Riismandel, 2008; Ross, 2018; 2009; Soskey, 2012; Zyda, 2006). Organisational culture, encompassing leadership style and practice as well as PD in teaching and learning practice, has the potential to influence organisational responsiveness. Better tools for project management, developing an LO culture, and finding the right leadership model are all potential avenues for improving leadership practice in adapting to rapid change in media industries (Bass, 2000; Bass & Riggio, 2006; Burke, 2010; Christensen & Eyring, 2011; d'Ambrosio & Ehrenberg, 2007; Heifetz & Laurie, 1997; Huston & Weaver, 2008; Kotter, 1995; McRoy & Gibbs, 2009; Pedler et al., 1989; Porter, 1996; Scott & Dixon, 2009; Smith & Bell, 2011; Van Note Chism et al., 2002; Vroom & Jago, 2007).

Media programs overlap with the post-secondary sector, which dictates the framework within which media programs may be offered. Declining funding from government is a key challenge, constraining media educators' ability to lead change in this environment, as rapid and increasing rates of change call for more frequent upgrades in existing technology as well as new investment in emerging technology (Bradshaw, 2013; Canadian Federation of Students, 2013; Canadian Federation of Students, 2015; Davison, 2016). Within the post-secondary institutional structure, lengthy approval processes, tenure, and research commitments have the potential to

confound efforts to ensure curriculum and teaching remain current with industry technologies and techniques, as well as purchasing and installing upgrades and new technologies as needed to support curriculum development and revision (Denman, 2005; Flaherty, 2017; Gittleman, 2015; Horn, 1999; Reichert, 2010; Tsichritzis, 1999; Wernick, 2006).

Ultimately, media industries' current environment of rapid change contrasted with the challenges of declining funds and restrictive post-secondary institutional structures drives the need to consider possible approaches to meeting both environmental demands and challenges. Given the challenge of lengthy approval processes for curriculum development and revision and the employer need for currency, one consideration may be altering program length and focus (Molebash, 2009; Riismandel, 2008; Soskey, 2012; Zyda, 2006). Three-year degrees and a focus on digital literacy versus technology-specific training are examples of how this approach might be expedited (Gross & Do, 2009; Ng, 2012; Riechert, 2010; Perrin, 2010).

Throughout the data collection and analysis process, this study examined stakeholder perspectives on the factors identified in the intersection of the industry and post-secondary spheres with the media programs sphere as they relate to the overall leadership challenge of maintaining currency in media schools. In line with Crotty's (1998) and Boisvert's (2012) perspectives, the goal was to construct knowledge from the interaction between media educators and the world with which they interact, and consider what approaches to change might make reasonable sense in relation to meeting the challenge of rapid change in media technologies and production techniques.

Chapter 3: Methodology and Methods

The intent of this research was to examine the challenges facing media educators in keeping pace with rapid evolution of technology and storytelling techniques, and to consider possible approaches for meeting these challenges. Diverse methods were required to gather data on the current environment, distil the significant areas of concentration, and collect first-hand accounts of educator experiences.

The central research question underlying this study was: How might media educators improve leadership practice in adapting to rapid change in media industries?

This chapter begins with an overview of the methodology employed and the research setting and sample studied. Data collection and analysis methods are described, followed by a discussion of ethical considerations and trustworthiness of the findings.

Methodology

A constructionist epistemology and pragmatist theoretical perspective underlie my choice of a particularistic case study design, allowing for consideration of a diverse set of quantitative and qualitative data gathered from multiple sources to explore a practical leadership problem facing post-secondary media educators across Canada.

As Merriam (1998, p. 27) made clear, a phenomenon must be intrinsically bounded to merit a case study approach. Merriam suggested considering how finite the data collection would be as a means of assessing the boundedness of a topic: “If there is no end, actually or theoretically, to the number of people who could be interviewed or to observations that could be conducted, then the phenomenon is not bounded enough to qualify as a case” (p. 28). In this study, the phenomenon is bounded by its impact on a specific group of individuals tasked with preparing the next generation of media practitioners for careers in their chosen fields. The

number of people who could be interviewed or who could otherwise take part in this study is limited to administrators, faculty, and staff who support the delivery of media production curriculum in Canadian post-secondary institutions, and to employers of the students who graduate from these programs.

Yin (2014) defined case study as “an empirical inquiry that investigates a contemporary phenomenon (a case) in depth and within its real life context” (p. 16), and stated that in case study inquiry, “there will be many more variables of interest than data points, as one result relies on multiple sources of evidence” (p. 17). Noting that the unique strength of case study is its ability to deal with a full variety of evidence, Yin further stated that “a good case study will therefore want to use as many sources as possible” (p. 105).

Yin’s (2014) description aligns with this study of the real-life challenge facing media educators who seek to improve leadership practice in dealing with the contemporary phenomenon of increasingly rapid change in media technologies and techniques. Yin’s comments regarding the reliance on multiple sources of evidence further supports the collection and consideration of a diverse set of quantitative and qualitative data gathered from 96 participants at 26 post-secondary institutions across Canada and supplemented with data from 20 media industries employers. Of those participants working in post-secondary institutions, 55 identified as working at colleges, 22 at polytechnics, and 18 at universities, with one respondent reporting “other.” When reporting their roles, six of the same group of participants identified as deans, 16 as academic managers (chairs/associated deans), two as operations managers, 57 as faculty, seven as staff, and eight as “other.” Of the 20 employer participants, many worked in multiple sectors, the most frequently identified being broadcast television, web, and mobile media.

> Merriam (1998) described the particularistic case study approach as applying to cases that focus on a particular situation, event, program, or phenomenon. The case itself is important for what it reveals about the phenomenon and for what it might represent. This specificity makes it an especially good design for practical problems—for questions, situations or puzzling occurrences rising from everyday practice. (p. 29)

A case study focussed on the practical problem of keeping pace with rapid change in media technologies and production technique fits with Merriam's description of the particularistic approach.

Data collection was conducted in two phases and utilised an explanatory sequential design, "first collecting quantitative data and then collecting qualitative data to help explain or elaborate on the quantitative results" (Cresswell, 2012, p. 542). Phase one entailed collection and analysis of data mined from questionnaires to determine the scope of current challenges and approaches to meeting those challenges. Phase two utilised interviews to delve deeper into specific questions raised by phase one and explore potential models for improving the process of dealing with the challenges at the heart of the study.

Cresswell asserted that an explanatory sequential design (2012)

> …captures the best of both quantitative and qualitative data—to obtain quantitative results from a population in the first phase, and then refine or elaborate these findings through an in-depth qualitative exploration in the second phase. The difficulty in using this design, however, is that the researcher needs to determine what aspect of the quantitative results to follow up on. (p. 543)

While the intent of this background information is to provide detail regarding data collection and analysis process undertaken for this study, it was clear from Cresswell's (2012)

warning that, to some extent, the exact details of the second phase of this research could not be fully determined until the first phase was complete.

Research Setting

The primary setting for this research is within the faculties of Canadian universities, colleges, and polytechnics that specialise in training media professionals, with a particular focus on those programs teaching media production. This fits with the objective of conducting research that is valuable to leaders of programs tasked with preparing students for a rapidly evolving media production workplace. The study is limited to Canada based on time and resources available, as well as on Canada's unique position in the global media economy, reliant as it is on subsidy and international coproduction agreements for survival. Canadian media production organisations constituted a secondary research setting, providing insight into the changing needs of industry, and new trends in technology development.

Research Sample

The research sample included stakeholders from both academic and industry sectors. Primary stakeholders who participated were those charged with the responsibility of curriculum development and capital investment planning, including administrators, faculty and staff at Canadian colleges, polytechnics, and universities. Secondary stakeholders included employers representing a broad range of media industries and roles, with experience in recruitment and supervision of employees who have graduated from a two- to four-year diploma or degree program. Prospective employers are concerned with the fit between curriculum and "real world" developments, and can provide an important perspective on key skills sets required to ensure sustainability through the pace of change.

While phase one called for quantitative data collection and analysis, the limited scope of this study and potential reluctance of some invitees to participate were important factors to consider in determining an appropriate sampling approach. A non-probabilistic sampling approach—specifically convenience sampling—was therefore utilised, where "the researcher selects participants because they are willing and available to be studied" (Cresswell, 2012, p. 145). As program and contact information is readily available for post-secondary institutions across Canada, representatives of those institutions offering media production programs were contacted directly to solicit interest and secure participation in the study. Potential employer participants were contacted during the same period, and questionnaires were distributed to those parties willing to participate.

Sampling for phase two followed the purposeful sampling approach applied to qualitative research, allowing as it does for study of several sites, groups, and/or individuals (Creswell, 2014, p. 206). A theory or concept sampling strategy was adopted to "help the researcher generate or discover a theory or specific concepts within the theory" (p. 208). This fits with the goal of providing new insight for media educators, as stated at the outset of this proposal.

Data Collection

Phase one of my research involved data collection on post-secondary institutions offering media production programs in Canada, the challenges those institutions are facing in the wake of rapid change in media production, and how they have attempted to deal with those challenges to date. Research began with web browsing, phone calls, and e-mails to potential participants to identify those institutions where the current environment is most relevant to the focus of the study. This stage included a review of print and electronic documents detailing program offerings at Canadian institutions, as well as a review of industry and government reports for

evidence of trends related to graduate employment and the life cycle of media technologies and properties. From this data, a short list was developed of representative institutions facing the challenge of keeping pace with rapid change in media technologies and techniques.

Faculty, staff, and administrators were asked to respond to questionnaires addressing the key variables raised in this study, such as the impact of declining funds and the potential of changes to curriculum to address these issues (See Appendix A for a list of questions used in this phase of the study). While certain aspects of this study fit with existing instruments, such as attitudinal or behavioural data, the diversity of the variables called for development of an instrument specific to the nature of the study. Likert scales were used to rank variables from 1–5 on points of agreement, preferences, and specifics of program activities. Most questions also provided space for additional comments to be analysed for keywords relevant to the study. This data served to determine to what extent current conditions meet researcher expectations, what specific aspects of institutional life most contribute to the problem, how institutions have attempted to cope, and to what extent they have been successful.

Simultaneously, data were collected from industry representatives using similar methods (Appendix B). The questionnaire developed for these groups was designed to explore their unique perspectives on the importance of maintaining currency and educators' current success in keeping pace with industry developments, as well as to gather insight into the assessment criteria used by these stakeholders to form such opinions, and the recommendations they may have for educators in addressing these issues.

Respondents to the educator questionnaire who indicated that they would also be willing to participate in phase two were invited to be interviewed, with the aim of delving deeper into the findings from phase one to improve clarity and consider the value of the data.

Methods of Analysis

As the intent of the quantitative data collection and analysis in this study was to provide context to the qualitative exploration of institutional and human behaviour, analysis of the quantitative data have focussed primarily on identifying general tendencies in responses and examining the different perspectives of the stratified populations. Quantitative data collected from the educator questionnaires was sorted as a whole, and was also broken into subsets of institution, role, and area of concentration such as television, film, or game design. Quantitative data from the employer questionnaires was similarly sorted, using the same areas of concentration; however, given the low sample size of industry respondents, analysis was limited to responses of the group as a whole. Such analysis provided insight into the varying perspectives of respondents based on whether they worked in industry or were employed at a university, college, or polytechnic; if their role in the academic sector was as an administrator, faculty member, or staff member; and what area of media production they led, taught, or supported. This data gave rise to questions as to why one group might have a different perspective from another, and these questions became part of the focus of the interviews conducted in phase two (Appendices C–F).

Material gathered in phase two was transcribed and analysed to identify text segments to be coded. Codes were reviewed to uncover themes and allow for reporting results in relation to those themes. Particular effort was made to identify the strengths and weaknesses of current approaches to maintaining currency, as well as potential areas for development or adaptation of alternative approaches to planning.

Utilising both quantitative and qualitative methods carries with it the risk of accusations of incommensurability, the philosophical stance that holds that conclusions cannot be drawn

from results without common measure (Kuhn, 2012). In this case, the elements requiring different approaches to data collection and analysis are quite distinct from each other, which reduces the potential for incommensurability. For example, quantitative data collection and analysis was limited to phase one, and it serves the purpose of providing context for discussion in the more qualitative research method of interviews employed later in the study. For this reason, I believe the application of a particularistic case study methodology utilising an explanatory sequential design is justified and can be applied while maintaining commensurability.

Recognising the time and effort required to develop suitable instruments for this study, and the costs associated with conducting on-site interviews, the researcher self-funded personnel to assist with sorting the data and conducted interviews by phone where practical.

Timeline

This research was conducted over the course of two years from April, 2016 to January, 2018. The timeline from approval of the research proposal to defense is shown in Table 1.

Table 1. Timeline of study

Date	Activity	Notes
10/17/2014	Proposal oral candidacy exam passed	Researcher changed jobs and moved to a new city in February, 2015, impacting the speed of progress through the ethics review process. Researcher developed project specific instruments, including the educator and employer questionnaires and the educator interview questions.
8/27/2016	Ethics approval received from U of C, and educator questionnaire opens	Following ethics approval from U of C, it was discovered that all participating post-secondary institutions required independent ethics approval before potential participants at those institutions could be approached to participate.
4/11/2017	Ethics approval received from 26 participating institutions	Ethics approvals were received over a period of one year, with the first coming in on March 31, 2016 and the last on April 11, 2017. Invitations and educator questionnaires were sent to potential participants at each

		institution as soon as that institution's approval was received.
5/20/2017	Educator questionnaire closed	Educator questionnaire was closed May 20, 2017, and initial analysis was begun to look for results to be clarified in interviews with educators.
7/25/2017	Employer questionnaire opens	Employer questionnaire was opened, and invitations and questionnaires were sent to potential participants. Responses were reviewed and compared to educator questionnaire for further insights into respondents for clarification with educators.
9/16/2017	Follow-up interviews with educators begin	Respondents to the educator questionnaire who indicated that they would also be willing to participate in an interview were approached and scheduled for interviews. The employer questionnaire remained open at this point in the hope of gathering more responses.
10/31/2017	Employer questionnaire closes	Having secured a total of 25 responses, the employer questionnaire was closed.
2/19/2018	Educator interviews complete, analysis begins.	The last educator interview was completed February19, 2018, and coding and analysis of the interviews, as well as comments from the earlier questionnaires began.
3/16/2018	Analysis complete	Analysis completed, findings chapter began.
7/18/2018	Thesis first draft complete	First draft complete, minus final chapter, and sent to supervisor for review.
8/31/2018	New supervisor appointed	Due to unforeseen circumstances, Dr. Ann Calvert disclosed that she would be unable to continue as supervisor for this dissertation. Dr. Beaumie Kim assumed the supervisor role.
12/10/2018	Final draft of thesis submitted to committee	Draft thesis submitted to supervisory committee for review.
02/21/2019	Oral defense exam	Thesis successfully defended

Ethics

As this research involved human respondents and took place in the course of completion of an EdD at the University of Calgary, approval was required from the Conjoint Faculties Research Ethics Board (CFREB) Secretariat of the University of Calgary. In preparation for application to the CFREB, I enrolled in the online Course on Research Ethics (CORE) required of all applicants. In terms of meeting the criteria of the CFREB, the application package contained all relevant documentation such as consent forms, recruitment invitations, and sample

interview questions. As this study carried minimal risk, the review at the weekly Chair's meeting was all that was required.

Both phase one and two of the research involved participants employed by Canadian colleges, polytechnics, and universities, and ethics approval was also required from every participating institution prior to soliciting participation by representatives from those institutions. This process was time consuming and caused delays of up to a year at some institutions.

As the nature of this project did not carry with it the need to reproduce, display, or distribute copyrighted materials, there was no need for clearances of intellectual property apart from appropriate citation of published works where referenced.

Recruitment Procedures

Recruitment began with research to determine which post-secondary institutions were most likely to experience the phenomenon being studied, specifically institutions with programs focussing on media production. Deans and chairs at the selected institutions were sent e-mail invitations to participate in the study and were advised that invitations would also be going to their faculty and staff (Appendix G). Follow-up phone calls were used to improve the chances of a positive response and answer any questions that might arise. In some cases, deans and chairs were asked to assist in delivering invitations to faculty and staff (Appendix H). Deans and chairs were also asked to help identify potential employers who might be willing to participate in the study. This information was used to expand the researcher's own network of contacts among employers, who were then also sent invitations to participate (Appendix I). In total, 463 administrators, faculty and staff at Canadian colleges, polytechnics and universities were invited to participate, with 96 completing the questionnaire and 20 participating in follow-up interviews. Additionally, out of the 134 employers invited to participate, 25 completed the questionnaire.

Informed Consent

All participants in the study were asked to sign consent forms using the standard University of Calgary template. There were two versions of the consent form, one for educators (deans, academic managers, faculty, and staff), and one for employers (Appendices J and K).

Privacy and Confidentiality

It was noted that some participants might be hesitant to share information that could put their institutions in a bad light. In anticipation of this concern, all participants' identities are to remain confidential. While participants' responses were categorised as belonging to particular stakeholder groups (e.g., faculty, employers), no information was collected that specifically identified individuals or entities. Consent forms for all stakeholders included this information, while consent forms for educators also included information concerning audio and/or video recording of interviews.

Potential Risk to Participants

Participation in this study carried with it very little risk for participants. At most, participants risked comments becoming public that could put them and/or their institution in a poor light. To guard against this possibility, research assistants hired for this project were required to sign a confidentiality agreement.

Data Management

All data collected was securely stored on password protected, encrypted hard drives. Only the researcher, researcher assistants hired to work on the study, and the researcher's supervisor had access to the data. This, and all other ethical considerations detailed here, applied to all stages of research, publication of the thesis, and any other publication of material arising from this study.

Trustworthiness of Findings

Given that my interest in this research proposal derived directly from my own observation of the challenges described in this proposal, I was of course concerned with ensuring academic integrity in the findings. As this research project was undertaken as a thesis project in an EdD program, it is by nature an individual project. As for the other factors, I saw identifying researcher bias as a valuable exercise in identifying the impact of bias in the research process. I likewise applied standardised methods for analysis, which included categorising, coding, and cross-referencing data arising from questionnaires and interviews. Data from questionnaires were sorted by question to compare similarities and variances in responses, and categorised by institution, role, and area of study to further explore the research problem in relation to these variables. The interviews were transcribed in full and were coded according to themes arising from respondents' comments. For example, on the topic of declining funding, the following codes were developed based on respondents' comments: DF1, it is an issue; DF2, it is not an issue; DF3, other methods of funding; DF4, success of other methods of funding. As already identified in the methods and methodology section of this chapter, I was committed to exploring alternative explanations and models through the research process—for example, investigating the relevance of strategic planning models found in business literature—which then fed into conclusions drawn from phase one and the development of protocols for phase two.

Transferability

Bloomberg and Volpe (2012) noted that "although qualitative researchers do not expect their findings to be generalizable to all other settings, it is likely that the lessons learned in one setting might be useful to others" (p. 113). This study has been limited to post-secondary institutions with media production programs in Canada. While the Canadian media production

environment is economically challenged by its proximity to the USA and dependence on international sales and coproduction agreements, the impact of rapid change in media production technologies and techniques is not limited to that market. As noted in Chapter 1, this study will likely be of interest to media studies educators internationally, while it will be viewed through somewhat different lenses depending on the readers' economic and academic limitations. The study may also be of interest to researchers studying the impact of rapid change in other fields: IT, health sciences, and business are just a few areas dealing with their own challenges in keep pace with the escalating evolution of technology.

Credibility

Collecting multiple sources of data and comparing these sources through triangulation is one of a number of tactics described by Bloomberg and Volpe (2012) to ensure credibility. In the case of this study, data were collected and compared from a total of 121 participants representing post-secondary administrators, faculty, and staff involved in media production programs as well as employers of the graduates of those programs. Questionnaires containing both quantitative and qualitative data collection methods were further explored through follow-up interviews, allowing for triangulation of data collected through multiple methods with multiple stakeholders.

The number of participants and the degree of engagement are further cited by Merriam and Tisdell (2016) as measures of credibility. They noted that "the best rule of thumb is that the data and emerging findings must feel saturated; that is you begin to see and hear the same things over and over again" (p. 248). In this study, responses to 31 questions by 96 educators and 18 questions by 20 employers, as well as interviews of up to 90 minutes with a subset of 25 educators, provided considerable reinforcement of perspectives from multiple sources. That said, the emergent findings also included divergent opinions, which have been included in Chapter 4

in accordance with Bloomberg and Volpe's (2012) recommendation to "present negative instances or discrepant findings" (p. 113) as a further means of adding credibility through discussion of contrary information.

Confirmability

Miles, Huberman, and Saldaña (2014) advised that the basic issue relating to confirmability is "one of relative neutrality and reasonable freedom from unacknowledged researcher biases" (p. 311). Miles et al. urged scrutiny on a number of fronts to bolster confirmability, including explicit description of methods and procedures; a clear depiction of the sequence of data collection, processing, and display leading to conclusions; and the linking of conclusions to exhibits of data. It is hoped that the reader will find a sufficient demonstration of these measures of confirmability through the descriptions provided of methods, procedures, data collection sequence, and analysis, and the linking of data charts and tables to the drawing of conclusions.

Dependability

Bloomberg and Volpe (2012) stated that "dependability refers to whether one can track the processes and procedures to collect and interpret the data" (p. 113). Miles et al. (2014) concurred that the underlying issue is "whether the process of the study is consistent, reasonably stable over time and across researchers and methods", and they distilled the essence of dependability review to the question "Have things been done with reasonable care?" (p. 312). In line with the key points for consideration provided by Miles et al., the researcher has aspired to ensure that the research questions are clear and congruent with the features of the study design, the role and status of the researcher have been adequately explained, and "data were collected

across the full range of appropriate settings, times, respondents… as suggested by the research question" (p. 312).

Conclusion

Narrowing in on the challenge of keeping pace with media industry evolution, both qualitative and quantitative analysis were required to explore the scope of the problem and the perspectives of those individuals on the front lines. The underlying epistemology of this study was therefore constructivist, and the theoretical perspective was pragmatist, where one joins the discussion "in progress" and engages directly with stakeholders in the process of addressing issues. A particularistic case study design was developed to explore the practical problem arising from everyday practice and examine the ways in which media educators have confronted the problem. Quantitative data collection and analysis were required to assess current perspectives on the research problem and the means of addressing it, followed by qualitative investigation to extract further meaning from the data, and explore further options to meet the challenges posed by rapid change. To do so required an explanatory sequential approach to extract and analyse both statistical data and participatory feedback.

Chapter 4: Findings

The purpose of this study was to investigate the challenges facing post-secondary institutions offering media production programs in keeping pace with the rapid change of media technologies and storytelling techniques. It is hoped that this study will bring new knowledge to the field of media production education, and that it will provide valuable insight for those tasked with training the media production workforce for the future.

The central research question driving this study was: How might media educators improve leadership practice in adapting to rapid change in media industries? To address this question, two questionnaires were developed aimed at two groups of key stakeholders concerned with the issue of media production training: educators and employers. Follow-up interviews were also conducted with a number of educators to bring further clarity to the findings from the two questionnaires.

Both questionnaires collected data through Likert scales, clarifying questions, and open-ended questions. In the case of questions with Likert scales, respondents were given the following instructions: Where a Likert Scale is used, the number 1 represents the least positive response or slightest degree of agreement, and the number 5 the most positive response or greatest degree of agreement with the question being posed.

This chapter presents the findings from both questionnaires as well as from the follow-up interviews with educators. Findings are organised under the thematic headings of current environment, key challenges, possible approaches to adapting to rapid change, and general advice. The first three categories examine topics raised in Chapters 1 and 2 of this dissertation. Each questionnaire also provided respondents the opportunity to offer advice on addressing the challenge of rapid change, and those findings are presented under the general advice heading.

Overview of Instruments, Coding and Presentation

Educator Questionnaire

Maintaining currency with media production technologies and techniques involves several parties within post-secondary institutions:

- Faculty who must develop and deliver relevant curriculum and determine technology needs.
- Technical support staff who participate in the selection, purchase, installation, and training related to new technology, as well as ongoing maintenance and support.
- Administrators who must consider the overall priorities and direction of media production programming, as well as the financial implications in capital investment.

In an effort to include all key stakeholders, educator questionnaire invitations were sent to members of all three groups at colleges, polytechnics, and universities across Canada offering media production programs. Out of 463 educators invited to participate in the study, 96 completed the questionnaire. While the questionnaires were confidential, respondents were asked to self-identify according to type of institution, role, and area(s) of media production taught or supported.

In consideration of the data presented here, it should be noted that respondent numbers varied in terms of self-identification by institution and role:

- Institution:
    - College: 55
    - Polytechnic: 22
    - University: 18
    - Other: 1

- Role:
    - Dean: 6
    - Academic Manager: 16
    - Operations Manager: 2
    - Faculty: 57
    - Staff: 7
    - Other: 8

Where a response of “other” was provided, responses were factored in with the most suitable of the main categories. The sole “other” respondent in the Institution category self-identified as retired faculty from a college, and was counted as College under Institution and as Faculty under Role. Program coordinators were also counted as faculty. Given the low number of respondents identifying as Deans, Operations Managers and Staff, two additional categories were created, Administrators (combining results from Academic Managers, Deans and Operations Managers) and Faculty and Staff (combining results from Faculty and Staff).

With regard to areas of study, respondents had the opportunity to identify as many areas as they were associated with. As a result, findings by area do not represent exclusive perspectives. An identifier (ID) was established for each area of study to assist in analysis of the data in relation to the area being taught or supported (e.g., T: Television).

- Area(s) of media production taught or supported:
    - T: Television
    - R: Radio
    - V: Video
    - F: Film

- J: Journalism
- P: Photography
- N: Animation
- G: Gaming
- I: Interactive Media
- A: Audio
- O: Other (please specify)

The questionnaire was designed in such a way that analysis could be of aggregate data or of data disaggregated according to the criteria outlined above.

Employer Questionnaire

Employers in the media sector face similar challenges to educators in keeping pace with rapid change in media technologies and production techniques. A separate questionnaire was conducted with employers to gain further insight into the challenge of dealing with rapid change, and gain additional perspective on graduating students' readiness to enter the workforce. Findings in this section have been organised along similar lines to findings from the educator questionnaire. Of 134 invited to participate, 25 filled out the questionnaire.

Participants in the employers' questionnaire were asked to self-identify as working in one or more of the following sectors. The letter for each sector has been used when quoting respondents to identify the sector(s) the respondent is associated with, e.g., BTF = Broadcast, Television, Film.

- B: Broadcast
- C: Corporate
- I: Industrial

- E: Educational
- T: Television
- R: Radio
- W: Web
- M: Mobile
- I: Interactive
- F: Film
- P: Photography
- S: Music
- O: Other (please specify)

The categories most frequently identified were Broadcast (16 respondents), Television (13 respondents), Web (13 respondents) and Mobile (10 respondents). The least frequent choices were Industrial (1), Photography (1), and Music (1). It is fair to suggest, then, that the perspectives offered here come primarily from individuals involved in industries creating and distributing content for Broadcast Television, Web, and Mobile.

Educator Interviews

Of the 96 respondents who took part in the educator questionnaire, 20 also agreed to participate in a follow-up interview to provide additional insight into the findings from the educator and employer questionnaires. Findings from these interviews are reported using the same categories as the findings from the educator and employer questionnaires, and the coding is the same as that used in the findings from the educator questionnaire.

Current Environment

Keeping Pace with both Capital and Curriculum is a Challenge

Findings from the educator questionnaire. Questions 1–3 of the educator questionnaire collected demographic information to facilitate the disaggregation of data by respondents' roles, institutions, and areas taught or supported. Questions 4, 5, and 6 sought to confirm the researcher's baseline assumption that educators found keeping pace with the rapid evolution of media technologies and techniques a challenge. The findings indicate that the majority of educators do find keeping pace a challenge (Figure 2). A combined 72% of respondents chose 4 or 5 on the Likert scale for capital investment, while a combined 63% chose 4 or 5 for curriculum. When asked specifically to choose whether keeping pace with technologies or techniques was the most challenging, 59% chose technology while 41% chose technique.

Capital Curriculum Technology vs. Technique

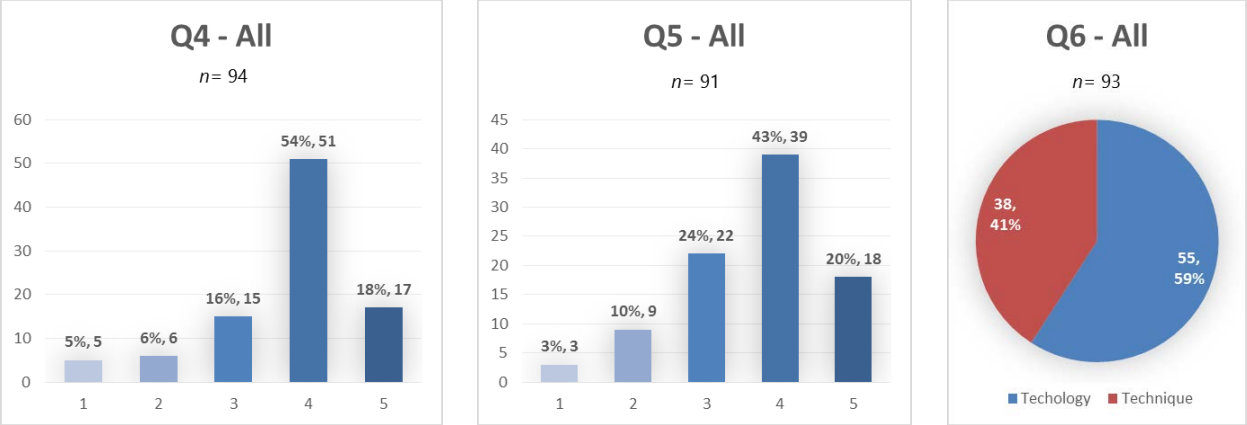


***Figure 2*. Educator questionnaire: Is keeping pace a challenge in terms of capital investment and/or curriculum development (Q4, Q5)?; Which is more challenging, rapid change in production technology or technique (Q6)?**

When categorised by institution type, respondents representing Polytechnics expressed the greatest concern over keeping pace with capital investment, with 81% choosing 4 or 5 on the Likert scale, while respondents representing Universities expressed the greatest concern over

keeping pace with curriculum, with 76% choosing 4 or 5 on the Likert scale. However, in all three areas, participants chose technology over technique as being the most challenging when it came to keeping pace.

A breakdown of the data by role suggests that Academic Managers are the group most concerned with the challenge of keeping pace with rapid change. In terms of capital investment, 93% chose 4 or 5 on the Likert scale, and in terms of curriculum 80% chose 4 on the scale. Parsed by area of study, Gaming and Animation responses ranked the highest in terms of concern.

Findings from the employer questionnaire. As in the educator questionnaire, the first questions on the employer questionnaire sought to confirm the researcher's baseline assumption that media industries find keeping pace with the rapid evolution of media technologies a challenge from the point of view of capital investment and recruitment and training of personnel.

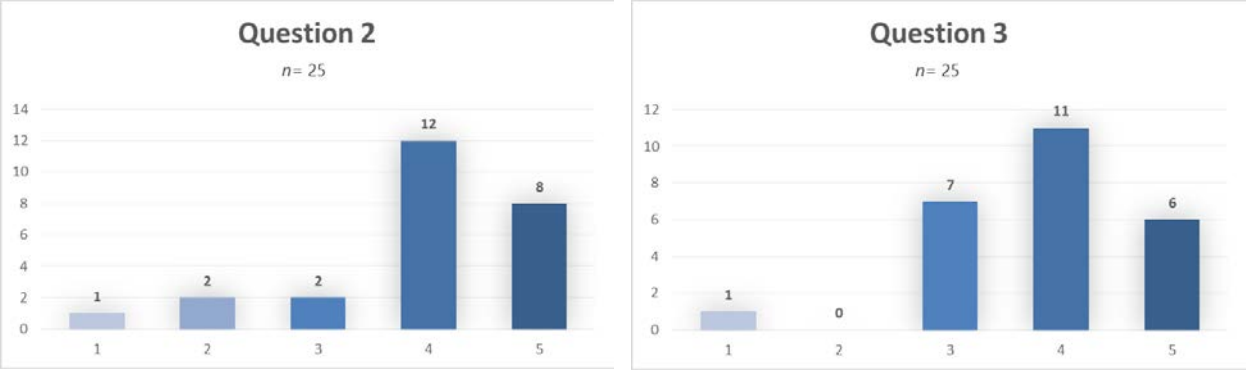


Figure 3. **Employer questionnaire: Is keeping pace a challenge in terms of capital investment (Q2) and recruitment and training (Q3)?**

Figure 3 shows that, with regard to capital investment (Question 2), 20/25 respondents chose 4 or 5 on the Likert scale, while 17/25 chose 4 or 5 on the scale for recruitment and training (Question 3). When asked to identify which of the two presented the greatest challenge (Question 4), 13 chose recruitment and training while 12 chose capital investment (Figure 4).

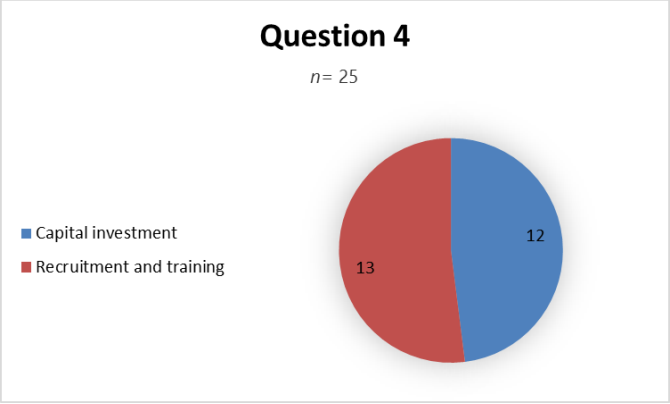


Figure 4. **Employer questionnaire: Which is more challenging, capital investment or recruitment and training?**

Table 2 contains a sample of comments from participants when asked to explain their responses. Those choosing capital investment as more challenging cited as concerns the impact technology upgrades can have across systems due to compatibility issues, and the potential for investing in technology that does not become mainstream. For recruitment and training, both familiarity with technology and soft skills were seen as critical. In the case of technology, some cited new technologies, while others noted a need to continue with legacy technology due to cost factors.

Table 2. Employer questionnaire comments: keeping pace through capital investment, and recruitment and training

Area	Challenge	Comment	ID
Capital investment	Scale of impact: integration and compatibility	When we have to switch cameras being used at (broadcast channel), it changes our entire system... from how producers log their footage, to how it's ingested into the system. So the team has stayed with XD Cam cameras with both freelancers and staff as much as possible... now extremely dated technology.	BT
Capital investment	Potential for failure of new technology to become standard	The rate of change is high and the available capital cannot support all new technologies. There are also new technologies such as stereoscopic 3D and VR that are not sure bets. It is harder now to identify a passing trend versus a long-term technology.	B

Recruitment and training	Recruiting employees already trained	Efficient workflows are paramount when incorporating new technologies, so training is always a serious budget consideration. To remain competitive in a revenue challenged industry, we are always finding new ways to do things more efficiently or cost effective. Recruiting employees already trained in new media and new technologies saves $$.	BWMI
Recruitment and training	Strategic recruitment and constant training	I have chosen recruitment because it is the most important and is potentially very costly to do well but even more expensive if done poorly. Most companies will not be in a position to be constantly upgrading to the newest technology so they would be relying on their workforce to maximize the technology they do have. So I see strategic recruitment as key as well as constant training to help current employees adapt.	BTRWMI
Recruitment and training	Need for soft skills—creative, management and business skills	It's not all about equipment or capital investment but investing in ideas, creative and skills and experience to bring stories to the screen. In our market, which is smaller, we are not seeing graduates coming out with the proper skillsets on both the creative, management and business side of production.	CDETRWMIFS
Recruitment and training	Need for soft skills—ability to adapt, learn and foresee the future.	Recruits background needs to be wide and varied. Adapting to change is massive. You must be willing to learn all the time. And if you can see beyond the curve even better.	BCTI

Findings from the educator interviews. Interview participants were first asked to comment broadly on what they found most challenging in keeping pace with rapid change in media technologies. A sample of these comments can be found in Table 3. Common themes included determining whether or not a new technology would become mainstream, what level of investment would be required, bureaucratic oversight and its impact on the approval process, and the demand on faculty time to be constantly learning and incorporating new technologies.

Table 3. Educator interview comments: keeping pace with capital investment and curriculum

Area	Challenge	Comment	ID
Capital and Curriculum	Length of program	By the time, for instance, our students come in the program, we have to be teaching them technologies that we assume will be out there in the market place in four years	Faculty, University, TVFP
Curriculum	Length of approval process for revisions	It takes a lot of time here because there are several levels. If the curriculum change is substantial, it goes into a different queue where it has to be approved by academic quality council, dean's council. And it can go right up into the Ministry of Higher Education if it's really significant. So, that takes a long time. The process is a long one. And by the time you get an approval, things have evolved.	Chair, Polytechnic, TRVFJPNGIA
Curriculum	Time available to update	We use the Adobe CC (Creative Cloud) master collection and they're consistently updating it on a bi-yearly basis. It's twice a year and there's major updates where I barely have a chance to dig in and unless I do it during my summer vacation, I don't have much chance of digging in and learning about the new stuff that's going on. And plus they're introducing a whole bunch of new software every half a year now so that's becoming more and more difficult.	Faculty, Polytechnic, PIVA

Interview participants were also asked to comment on findings from the educator questionnaire that suggested academic managers experience a higher degree of concern than other administrators, faculty, or staff about keeping pace with rapid change. Interview participants suggested that this might be because academic managers are closer to the front lines than senior management, hear regularly from faculty, advisory boards, and employers as to what is needed to remain current, and are tasked with the challenge of balancing curriculum needs with budget realities. A sample of these comments appears in Table 4.

Table 4. Educator interview comments: factors contributing to academic managers' concerns

Factor	Comment	ID
Contrasting priorities	Academic managers have a couple of key priorities. One key priority is making sure that the curriculum of programs is accurate, is planned for the future and will help the graduates get jobs and also academic managers have responsibilities institutionally to come in within budget targets.	Chair, College, TRVFJPNIA
Distance from front lines	I think what might account for them being the most challenged is because they're the managers… I mean, when you're teaching… you're one step closer to currency, then when you become an administrator and you're pulled back; when you're pulled back you're much more in a cocoon... and now as a dean, I just feel even more removed from it, and yet at the same time I am shaping curriculum.	Dean, University, TRVFJPIA
Workload	I guess because we probably do all the paperwork and do all the work. So, in terms of curriculum capital items, we're preparing all of those documents. We take the requests from faculty. And I don't mean to suggest that they're blissfully unaware of the complexity. But they do request and then they just sit back and ask, 'So, when is that going to change? When is that going to happen?'	Chair, Polytechnic, TRVFJPNGIA

Those who identified Gaming and Animation in the educator questionnaire as areas they were involved with also reported a greater degree of concern compared to those who identified other areas. In selected comments shown in Table 5, interview respondents noted the pace and scope of change in those industries as being among the most difficult to manage. The heightened challenge of remaining current with new software development, software updates, new technology, and new forms of content consumption (e.g., Augmented Reality and Virtual Reality) brings with it the need for frequent and regular financial investment, constant revision of curriculum, and ensuring those consulting on curriculum are active practitioners.

Educator questionnaire respondents representing Polytechnics as a whole registered the greatest degree of concern over keeping pace with technology, while University respondents reported the greatest degree of concern over technique. Regarding this finding, interview

respondents cited the differences between roles of Polytechnics and Colleges versus Universities as a likely explanation of this finding, as shown in selected comments in Table 6.

Table 5. Educator interview comments: factors contributing to gaming and animation concerns

Factor	Comment	ID
Rapid and ongoing change in technology-driven sector	It's all about the technology because these are completely technologically driven in terms of art forms or businesses. So, there's a lot more at stake and the changes in these areas are so rapid, on ongoing basis, that it is very hard for the academics to keep up because the changes in industry are not coming to academia very quickly.	Chair, University, TMFJPNI
Short shelf-life	It's the rapid change of the software but then the hardware needed to drive the software… you could get lost in cost and capital. And then two years from now, it's—usually you'd have three- to five-year shelf life on some technology, here, are you one to two years?	Dean, College, TRVFJPNGIA
Ensuring faculty are maintaining currency in practice	The change is so rapid that you would need to make sure you have the people who are practicing most currently, advising about how to keep pace. Because if they're not currently practicing, that's a pretty substantial mountain to climb.	Operations Manager, University, TRVJNGIA
Adapting curriculum	I think that might be tougher to keep pace with the curriculum changes because the industry is changing so fast and the equipment is changing so fast, or the style of the games or the animation. And, so how do you keep changing your curriculum to keep up with that and how do you change what you're teaching? When faculty keep putting things in and don't take enough out, and how do you know, what are the basic skills that students in those fields need to get that entry level job?	Dean, College, TRVFJPNGIA

Table 6. Educator interview comments: comparing institutional perspectives

Factor	Comment	ID
Role as defined by provincial government	I don't know if this correlates with anything, but I think we are viewed by the provincial government as an institution or type of institution that prepares graduates for employment. And I think there is that perception that universities don't necessarily do that.	Chair, Polytechnic, TRVFJPNGIA

	And so, they possibly might struggle with funding sources for all those students in arts programs who aren't necessarily aligned to any industry or employment.	
Faculty as theorists vs. practitioners	I think one concern universities might have with curriculum development is they may have employees who are less likely to have had industry experience by virtue of the pathway to a teaching profession at the university level. Also, the universities have traditionally been objective-based outcomes not outcomes-based curriculum development so it gives the teachers a lot more freedom. So they have generally less hands-on approach.	Chair, College, TRVFJPNIA
Leaders vs. practitioners	Polytechnics are about point and click. They're about the physical control of the object, whether it's a camera or whether it's an animation. They're training people with below-the-line skills. Universities are training people that hire the people from the Polytechnics with above-the-line skills. So, if I'm training somebody… to be a video game manager or producer, it's less important that they know how to use the technology than they know the HR and the policy implications of hiring the right people and building the team to use the technology.	Chair, University, TMFJPNI

Declining Funding

Findings from the educator questionnaire. Question 10 of the educator questionnaire asked participants if declining funding from government is an issue when it comes to maintaining currency. As seen in Figure 5, 76% of all respondents chose yes, while 24% chose no, suggesting that government funding is a key factor in an educator's ability to keep pace with rapid change in media production technologies and techniques. While the degree to which respondents saw government funding being a factor varied across institutions, roles, and areas, there was consistency in choosing a yes response, the only exceptions being those identifying as Staff and those identifying Animation as an area of focus. University respondents, as a whole, overwhelmingly agreed that the government funding is an issue with regard to maintaining currency, with 88% choosing yes as a response.

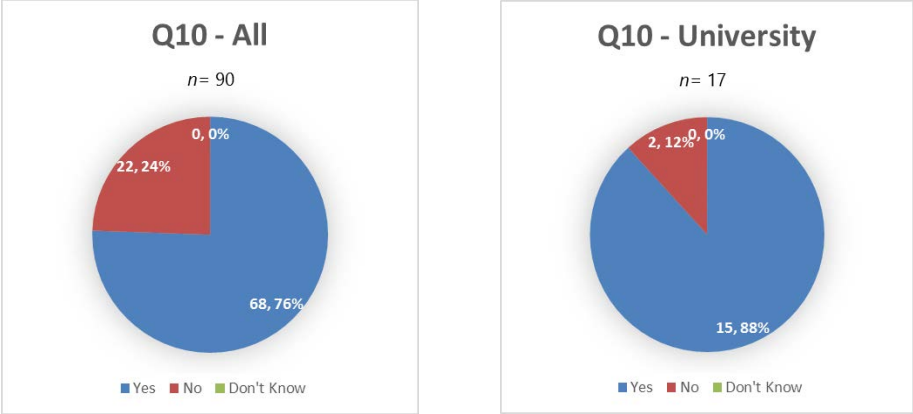


***Figure 5*. Educator questionnaire: Is declining government funding an issue in maintaining currency?**

Respondents were also asked to provide information regarding other sources of funding that have been developed at their institutions to maintain currency, and to indicate to what extent these combined strategies were sufficient. Respondents provided a great deal of information regarding alternative sources of funding, including tech fees/program specific fees charged to students above and beyond standard tuition, revenue generating activities, industry donations, partnerships, grants, funded research, international tuitions, alumni donations, professional development (PD) budgets, portfolio submission fees, corporate donations, and student union donations. Respondents also identified a number of cost-saving measures aimed at reducing demand on the institution to bear the brunt of costs, including long-term rental of technology and facilities as opposed to purchase, bringing one's own device programs, and requiring students to purchase technology up front coming into a program (e.g. DSLR cameras).

Figure 6 shows that when asked if these combined strategies were sufficient to maintain currency (Q12), respondents, as a whole, indicated that they were not, with 61% indicating no and 39% indicating yes. While percentages varied, consensus across institutions and areas of study was for a no response. Responses by role varied. The overall finding, then, is that declining funding from government is seen as an issue among educators in terms of maintaining currency

with media production technologies and techniques, and that while a number of institutions have developed alternate sources of funding or cost containment, the majority feel that maintaining currency remains a challenge despite these initiatives.

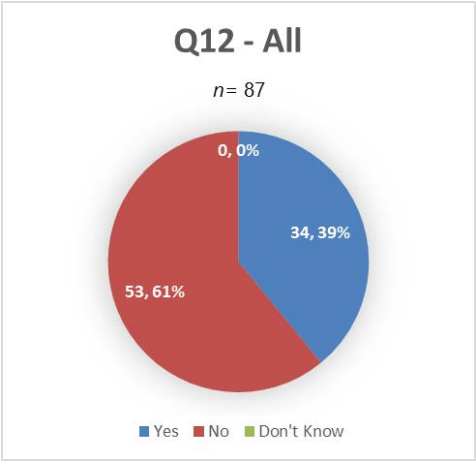


Figure 6. **Educator questionnaire: Are your combined funding strategies sufficient to maintain currency?**

Graduate Preparedness for the Workplace

Findings from the educator questionnaire. Question 7 on the educator questionnaire asked respondents to consider the degree to which they felt students were graduating with the knowledge and skills they need to be successful in today's media industries (i.e., sufficient familiarity with current technologies and techniques, as well as the ability to adapt in a rapidly evolving field). Figure 7 shows the overall response as well as responses broken down by institution. Sixty-six percent of respondents expressed confidence, choosing 4 or 5 on the Likert scale, while 24% chose 3 on the scale, indicating a neutral response to the question. Respondents representing Colleges and Polytechnics expressed greater confidence than those of Universities.

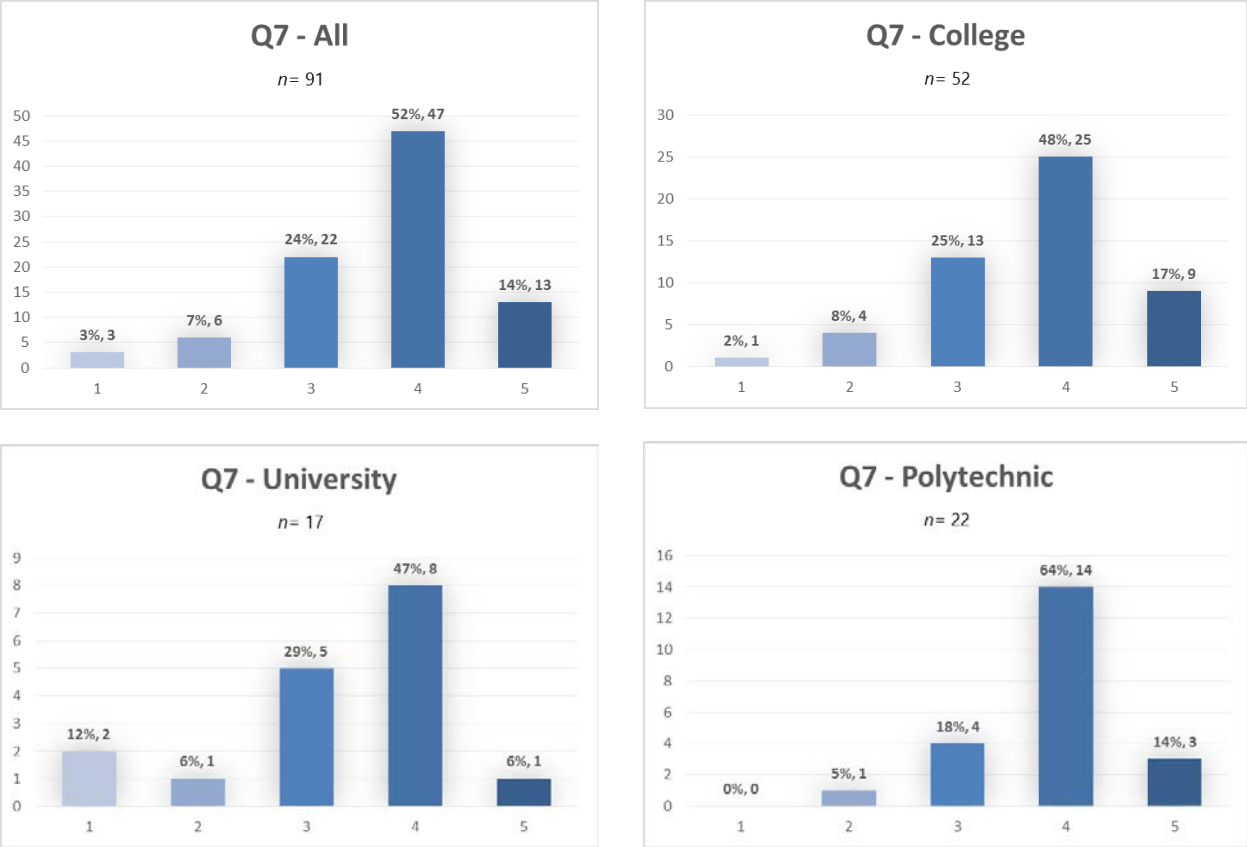


Figure 7. **Educator questionnaire: Are students graduating with the knowledge and skills they need to be successful in today's media industries?**

As shown in Table 7 below, participants' comments centred mostly on the value of teaching foundational skills and adaptability:

Table 7. Educator questionnaire comments: student preparedness for the workplace

Preparedness	Comment	ID
Good: foundational skills, adaptability	The foundation skills are still the same. Need to teach adaptability as much as anything.	Academic Manager, College, TRVJPIA
Good: foundational skills, non-technical; innovation, creativity, critical thinking, audience	I think what they are getting is a foundation that is based less on technology that will continue to be relevant but more on the ability to innovate and create regardless of the modality, as well as be critical thinkers and know how to connect with audiences.	Dean, University, TRVFJPIA
Good: adaptability, future proofing	We hopefully give them the skillsets, not just with specific technology, but with the innate ability to adapt over time after graduation. A way of thinking in broad terms with an	Faculty, University, TRVIA

	ability to adapt to new technologies and techniques that we currently don't have—future proofing.

Findings from the employer questionnaire. Employers were overall less confident than educators in assessing student's readiness to enter the work place, defined as having sufficient familiarity with current technologies and techniques as well as the ability to adapt in a rapidly evolving field (Question 12). As Figure 8 shows, the mean score for employers was 3 on the Likert scale. However, out of 23 who responded, eight chose 3 and eight chose 4, the mean being influenced downward by the four who chose 1 and the two who chose 2.

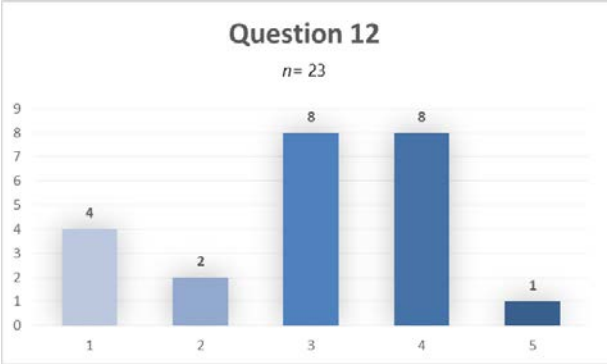


Figure 8. **Employer questionnaire: Are students graduating with the knowledge and skills they need to be successful in today's media industries?**

Selected comments in Table 8 show that a common theme among respondents' comments was the value of foundational skills and theory over learning specific technologies or techniques, although some did feel educators fell short on providing training on current industry hardware and software.

Table 8. Employer questionnaire comments: student preparedness for the workplace

Preparedness	Comment	ID
Good: learn basics and ability to adapt	My experience is that media production students graduate with a good overview of the industry as a whole and those skills are fine-tuned once they begin to work with an employer. In these quickly changing times they are also able to bring new insights to employers based on post-secondary learning and just being part of	B

	a younger demographic. For example, their experience with the latest and most popular social platforms among their peers.	
Poor: lacking core workflow and soft skills	Core workflow competencies and soft skills seem to be missing from the students' skill sets. I've also noticed that important ideas like an understanding of basic production and post-production concepts (e.g. timecode, neatness/tidiness, project organization, etc.) need to be developed on the job, often to the detriment of timelines and deadlines.	BWM
Poor: lacking multiplatform, mobile, social vs. legacy media	For the most part, we see students who are still being trained for the legacy media industry, which is shrinking. Need to focus on a multiplatform world, mobile first rather than digital first, social rather than print or broadcast, journalist rather than technician or reporter.	BWMI
Mostly good: content creation; Lacking current software experience	For the most part yes. Students are being educated with a firm understanding that content creation is now a very vast and multi-disciplined form. However, I think that educators need to pay more attention to what tools professionals are actually using. The students must be taught professional technique, but to be able to have experience with particular software applications that are being used by the industry gives the students the ability to become employable more quickly.	T
Good when basics taught	Digital media is changing so rapidly, we usually have to retrain everybody, post-secondary media trained or not. It’s a bonus when the basics of production are well absorbed, and we can just focus on the specifics.	F

Employers were also asked to share what skills and training students should have beyond familiarity with current technologies and techniques. The most common themes among respondents’ comments in Table 9 were the need for adaptability, critical thinking, professionalism, and an entrepreneurial mindset.

Table 9. Employer questionnaire comments: skills needed beyond technologies and techniques

Skills needed	Comment	ID
Soft skills: positive attitude, good work ethic	The most important thing a student can learn is that knowledge and ability can only take you so far. Having a positive attitude and a good work ethic will ultimately lead to employment and moving up in an organization. Skills are important but must be supported by soft skills.	B
Business skills	Business. Pricing, copyright business practices and client management are imperative skills for success in the industry.	P

Critical thinking and cultural literacy	Critical thinking and cultural literacy. Technology provides tools. Using them optimally requires a well-rounded base of knowledge, an ability to think analytically and the curiosity and courage of an open mind.	BETWMF
Investigative	Investigative skills using data tools, multiplatform training, mobile first mentality, social media skills.	BWMI
Digital literacy	Digital literacy, multitasking.	W
Adaptability, critical thinking, teamwork	To be adaptable, open to new ideas and learning, to employ critical thinking and analysis, to work successfully in a team.	BTRWMI

Findings from the educator interviews. Results from the educator questionnaire showed that College and Polytechnic respondents were overall more confident than those representing Universities, in that they were graduating students with the knowledge and skills they would need to be successful in today's media industries. When asked to provide insight on these findings, interview respondents again pointed to the differences in the roles of the institutions, and the purpose of the training provided, as the mostly likely contributing factors. Some respondents expanded the conversation to the value of combining a university credit with one from a college or polytechnic, as shown in Table 10.

Table 10. Educator interview comments: graduate preparedness by institution

Perspective	Comment	ID
University = theory, college = practice	I don't know how much universities spend on hard skills, but I know that colleges, that's our emphasis. We tend to be less theoretical. And I know that universities require a lot more theoretical, less practical courses, studying English, Political Science, Economics, which is all good. I'm not dissing any of that…. And I would say 80% to 90% of (college students)—with the work that they're doing—is hands-on all the time.	Faculty, College, J
University slow to change, roll out new curriculum	I think I'm sure I was one of the respondents saying I was not as confident and I can say that because over the course of seven years, curriculum takes four years to roll out. And if in seven years, it's already changed, great. So, immediately then we can't possibly be meeting exactly what it is that the industry requires.	Operations Manager, University, TRVJNGIA

	Now, that's not the same thing as saying that they don't have skills, or they don't have useful skills… So, whether it's just maybe the university model is too slow to change.	
Colleges closer to industry, change, easier to react	In my perception, the colleges believe they're much … closer to change, we're closer to our industry, we react or it's easier to react. If you're potentially in this field in the university and you've got to go through the senate and all these other areas to make significant changes, it could seem daunting or an uphill battle whereas someone has total control and they're teaching their one course this way and they just don't think it should change.	Dean, Polytechnic, TRVFJPNGIA
University = long game, college = short game; university ≠ trade or craft; combination ideal	It's a question whether as an educator you're playing the long game or the short game. I think that if you answer that question thinking of the short game of who we are employing in the next two or three years, I think that that's why universities are really insecure, there are very few—shall I call them trades or crafts or specific applications—that anybody would in my opinion, go straight in to a job out of a university.... As I've often said is, I think people should go to a college, get a few years and then go get a degree and go back in, but that's just not possible, but that's to me the ideal education, but what is of course happening is the reverse, is people are going to university, and then they go and get a couple of years and so that they can get in for that first and then they have the degree behind them, and I think that's why.	Dean, University, TRVFJPNIA

Those who participated in the employer questionnaire expressed less confidence, on the whole, than educators when asked to what extent they felt graduates were ready to enter the workforce. As shown in Table 11, interview respondents were not generally surprised by this finding. In sampled comments, respondents cited unrealistic expectations, graduate maturity, and the need for both critical thinking and technical skills in a student's education as possible factors contributing to employers' perceptions concerning student readiness.

Table 11. Educator interview comments: employer expectations

Perspective	Comment	ID
Less in-house training, higher expectations for job readiness	Employers can be a little unrealistic. I mean, back in the day they used to do a lot of the training in-house. Now, I think we spoil them, and they want people coming with a lot more skills. They don't have time to train people. They want people to hit the ground running.	Chair, Polytechnic, TRVFJNGIA
Less partnership with educators in development, higher expectations for job readiness	I suspect that we work with different lenses and we have different expectations. I noticed this with practicum placements, I have employers who say things like, "I only want your best student." And I'm often surprised that they don't see themselves as more part of the developmental piece or partners in education.	Chair, Polytechnic, TRVFJPNGIA
Employers looking for analytical skills more than technical skills	Employers, at least the ones that I am in contact with—and this is in media, in advertising, in animation and so on—are less concerned about technology than they are about the analytical skills. I remember (an employer) once saying this to me that they can always hire somebody who knows the technology and it doesn't take long for somebody to learn the technology if there's a software program. You get the tutorials on YouTube and you learn the technology. What's hard is learning the artistic and the commercial side of how to use the technology, but anyone can edit on a program now if they have enough time. They can learn how to edit. But it's the choices that are important.	Chair, University, TMFJPNI
Graduates are not at the skill level employers need	I think the employers, and being an ex-employer as well, is that the students aren't entirely able… the graduating students aren't creatively at the skill set that's needed for the production environment. So, there's kind of this disconnect of we have the students come through the system thinking that they're an individualized self-sustaining microorganism but when they hit the industry, they're part of a larger set of cells that have to operate in conjunction at the same time. So… a lot of people are frustrated on the fact that the students aren't fully trained in the software applications or versions that they have in place. They're not trained actually in the software that they may be using.	Faculty, University, TRVFJPNGIA

Value of Equipment Replacement Schedules

Findings from the educator questionnaire. Some institutions use an equipment replacement schedule (ERS) to help manage capital expenses, with an eye to ensuring technology has a predetermined retirement date that keeps pace with industry standards and development cycles. While some educator questionnaire respondents did not know whether or not their institution used such a strategy, more than half of all respondents to Question 8 reported that they did, with some variance between institutions as shown in Figure 9.

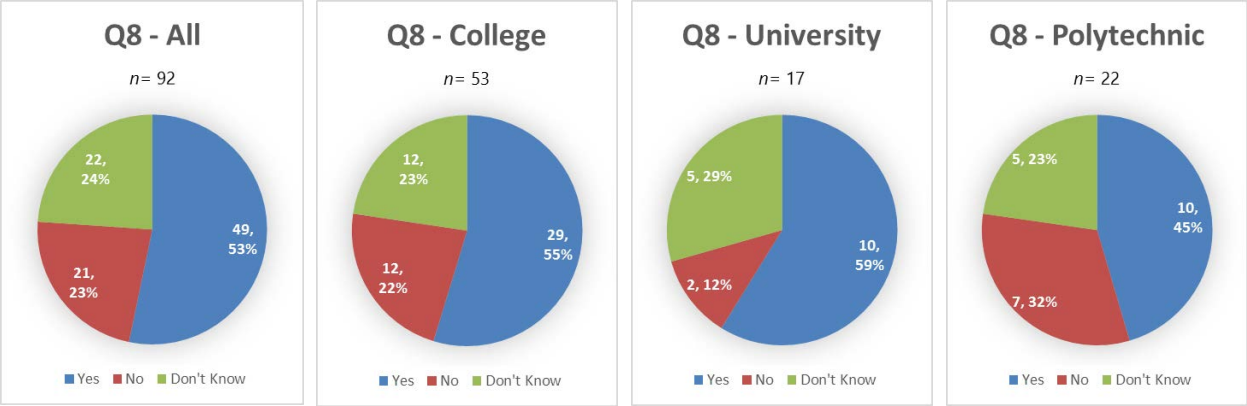


Figure 9. **Educator questionnaire: Does your program/school/faculty have an equipment replacement schedule?**

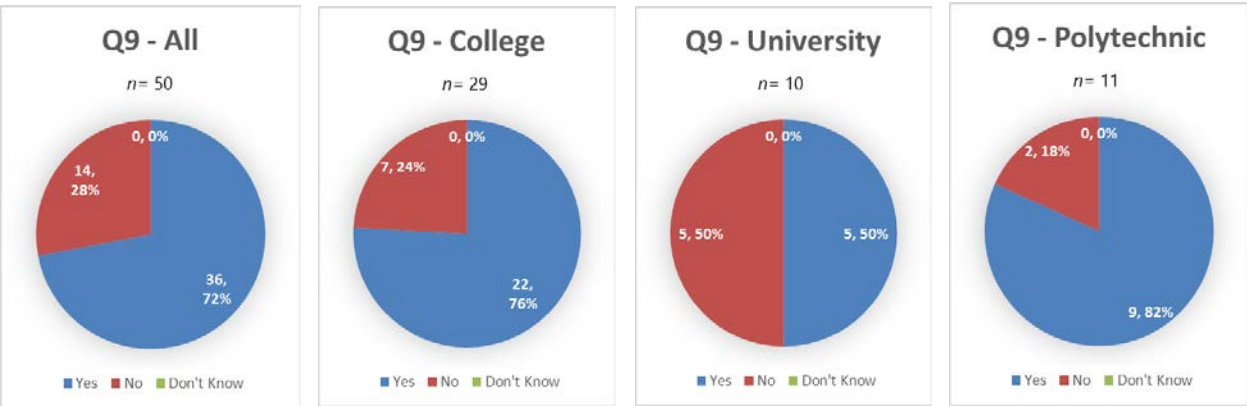


Figure 10. **Educator questionnaire: Do you believe your equipment replacement schedule is sufficient to remain current with industry standards?**

Those who responded “yes” were asked in Question 9 if they believed that their ERS was sufficient to remain current with industry standards. Figure 10 shows that most believed their ERS was sufficient, with Universities neutral.

Findings from the employer questionnaire. Like educators, employers must balance the need for investment in new technology with sound fiscal management. Employers were also asked whether or not their organisation had an ERS (Question 5), and if so, if the ERS was sufficient to maintain currency with industry standards (Question 6). Out of 25 respondents, 10 reported having an ERS, while 11 reported not having one and four reported not knowing, as shown in Figure 11. Of the 10 respondents reporting having an ERS, eight felt that their ERS was insufficient for maintaining currency.

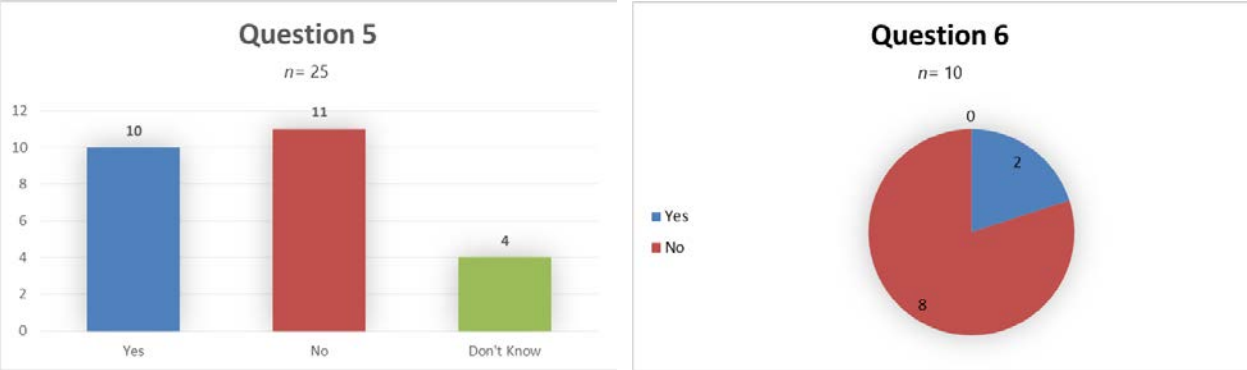


***Figure 11*. Employer questionnaire: Does your organisation have an ERS (Q5)? Do you believe your ERS is sufficient to maintain currency (Q6)?**

Findings from the educator interviews. As a whole, participants in the educator questionnaire who reported that their institution had an ERS expressed high confidence that their schedule was sufficient to maintain currency, while employer participants, by comparison, expressed low confidence. Educator interview respondents suggested that an overall difference in goals and objectives and the hard realities of operating a for-profit organisation most likely explained this difference in stated confidence (see Table 12).

Table 12. Educator interview comments: insights on educator vs industry confidence in ERS

Insight	Comment	ID
Educator focus state of practice vs. state of art	Our intention is to keep current with things in the state of the practice as opposed to the state of the art; because we can't afford it, because we're not given large enough capital budgets.	Faculty, College, TRVFJPNGIA
Industry = out of your pocket; educator = out of the government's pocket	If you're in the industry and it comes out of your pocket as opposed if you are a faculty member in government and it comes out of the government's pocket, if you're in industry, you delay your equipment replacement longer because it comes out of your pocket. You deduct as an expense but you're using your capital cost allowance to depreciate it overtime anyways. So, you're trying to stretch the value of the camera or the editing system or the software that you bought for as long as possible.	Chair, University, TMFJPNI
Funding for industry is client and project based; leasing more practical than owning	If a studio is just starting up, and this would be let's say you got five or six graduates coming together and they formed a group and they were able to produce something for a company, they're going to… the client is going to bear the equipment acquisition of the budget that they're getting. And most budgets, production budgets that I provide are leasing cost, direct one to one leasing costs for the time period in which the product is being used. I had studios of 200 people, so our equipment replacement was based on how much money we could extract from the clients.	Faculty, University, TRVFJPNGIA
More practical to rent than own in industry; substantial investment needed for short time	Employers, if you think about a facility that there's an investment to run a studio, that is maybe 3 or 4 studios that you can rent with all this equipment, the capital investment there compared to the capital investment I need to do here to have 1 or 2 little studios... I think in reality companies have a really hard time refabricating their whole investment because of the actual dollars, and because of the amortisation, that's a very practical financial reality whereas for us here, you know we have a couple of studios, we can play here, play there and then the other thing is, our sense of currency is probably not really at the same bar as an industry sense of currency. (I'll) give you an example—the area of AR/VR, my idea of currency is to have a small AR/VR kind of lab, and then the students can get a taste of it—now I feel current, whereas you're not really doing much in terms of AR/VR production. If you	Dean, University, TRVFJPNIA

	are in industry, you need a lot more, it's a major investment.

Impact of Rapid Obsolescence of Technology

Findings from the educator questionnaire. Question 13 in the educator survey asked if respondents had ever made a purchase that became obsolete before its retirement date, and if so, how the situation was resolved and what they would do differently to avoid similar circumstances. Figure 12 shows that 34% of respondents replied "yes," and provided examples and recommendations, with some variation by type of institution. Examples provided ranged from small hardware such as SD card readers and iPhone adapters up to camcorders. In most cases, incompatibility with next generation software and technology was the challenge. Industry trends also played a role, with a couple of respondents citing 3D cameras and production gear as an example of a trend that didn't take hold. Selected comments in Table 13 list several examples provided by respondents. Table 14 provides a sample of the advice provided by the same group for managing equipment obsolescence.

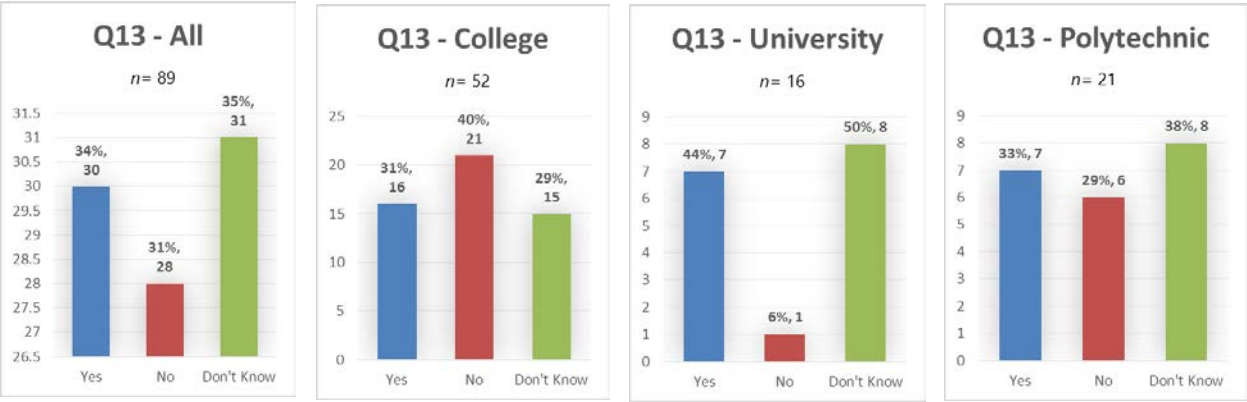


Figure 12. **Educator questionnaire: Have you and/or other individuals in your school or faculty ever made an investment in a technology that became obsolete before its retirement date?**

Table 13. Educator questionnaire comments: examples of rapid equipment obsolescence

Examples	Comment	ID
SD card readers	Early SD card readers for audio. We never really needed them, just phased them out.	Academic Manager, University, TRVJPIA
iPhone adapters	iPhone adapters—in future would avoid significant investment in such products.	Academic Manager, College, TRVFJPNIA
3D video	We tried to mount a PG (post-graduate) program in 3D video production. I'd avoid a similar circumstance by ensuring that the investment in time, energy, and money was worth it. Technology evolved very quickly, and bad but overpriced 3D films didn't help.	Dean, College, TRFJPNIA
Flip cameras	Flip cameras, some versions of hardware (phones) become obsolete quickly depending on their compatibility with software. In some cases, we try to choose hardware that's less expensive, and also software that doesn't come with massive license fees so we can be nimble.	Faculty, University, TRVJPIA
Camcorders	Camcorder Purchase—the record media changed from tape to CF card to SD card. Also, the video format changed from SD to HD SDI and HDMI video output. The camera operation is still good, just the output format is no longer compatible. Purchase of new camera systems was required. Unavoidable change in the industry.	Staff, College, TRVFJIA

Table 14. Educator questionnaire comments: advice for managing equipment obsolescence

Advice	Comment	ID
Rent, don’t buy	Renting rather than purchasing certain high-end cinema cameras (done); slower and more collaborative investment (across multiple programs) for emerging technology such as VR headsets, motion capture video, etc.	Academic Manager, Polytechnic, TRVFJC
Collaborate with faculty	Often those choosing the technology know it's new and have done their research; however,… they may not have had sufficient input from others, often those teaching it, HOW it will be incorporated. If it is not a collaborative decision and not planned out well enough in advance, it can be a hit or miss!	Faculty, Polytechnic, TVF
Pursue trade-in and leasing opportunities	Approached vendor for trade-in opportunity. Currently exploring the idea of leasing.	Faculty, Polytechnic, P

Wait a year, consult with colleagues	In future, we might wait one academic year to see if more appropriate technologies came on the scene. Consultation with colleagues from other schools might help us gain some perspective.	Faculty, College, TRVFJIA
Ensure curriculum in place	Pay a bit more attention to determine if there is curriculum based around it, and there are faculty that could champion the use of the technology.	Faculty, University, TVFJI
Consult with advisory committees	Try not to be at very forefront of new technology and rely on Advisory Committees to guide new technology purchases and timing.	Faculty, College, R

Findings from the employer questionnaire. Employers were also asked whether or not they had ever made an investment in a technology that became obsolete before its retirement date (Question 7). Figure 13 shows that out of 25 respondents, 16 reported that they had made such an investment. Themes arising from employers' comments on this topic included the need to review amortisation schedules, the importance of research in capital planning, and the value of planning processes such as Agile and Minimum Viable Product (MVP), as demonstrated by the sample comments in Table 15.

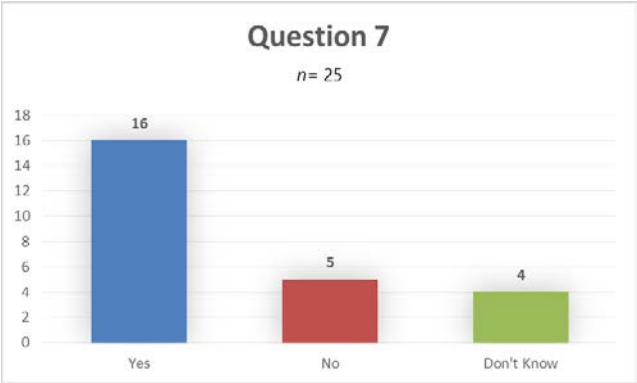


Figure 13. **Employer questionnaire: Has your organisation ever made an investment in a technology that became obsolete before its planned retirement date?**

Table 15. Employer questionnaire comments: advice for managing equipment obsolescence

Advice	Comment	ID
Work with finance to re-	Hardware replacement is based on amortization over a period of eight years, but recent technology turnover is much quicker, especially with most broadcast hardware now IT based. Many of	B

evaluate amortisation	these systems need replacement before they are written off from an accounting perspective. Need to work with finance departments to re-evaluate their processes.	
Use project management tools: Agile and MPV	Think about solutions from the POV of Agile and MVP, instead of solving every use case prior to deploying a solution.	BTRWM
Make smart choices, e.g. LED lighting	Buy more smartly. It is actually easier with LED lighting. There are only a handful of good products in the market. We have picked up our research a great deal so this does not happen.	F
Adopt rigorous planning process	In the not too distant past, the response has been crisis management: dated technology breaks down or atrophies, processes follow, and the organization struggles to implement a fix. In the last two years, however, we've adopted a rigorous product planning approach to new initiatives and evolving technologies, which has created much-needed dialogue across disciplines and departments. We're getting much better at anticipating and planning for change.	BETWMF
Adopt software as a service model	Most technology investments these days have rapid obsolescence. In many cases, we continue to use the technology which has compounded our currency problem. We are now looking to educate the business in the benefits of (Software as a Service) as an antidote for currency.	BTRWM
Research trends	We re-purposed the software/hardware for another task that we did not originally intend for this technology. Before making an investment in technology, research more fully the coming trends in the industry. Anticipate what the shelf life of the investment will be.	T

Findings from the educator interviews. Interview respondents also provided further examples of capital investment decisions that did not prove successful, and insights into the contributing factors and lessons learned from these situations. Most shared stories or insights and advice very similar to those already provided in the educator questionnaire: don’t be first in, spend time researching before making an investment, listen to industry, and ensure decisions are embedded in or driven by curriculum. Some noted that a certain amount of risk is important, and the learning may be valuable even if the outcome is not positive, and some suggested that renting

or seeking research funding may be preferable to direct purchasing when the future is undecided.

Several of these suggestions can be found in Table 16.

Table 16. Educator interview comments: perspectives on equipment obsolescence

Advice	Comment	ID
Don't be first in	I see a continuum of a new technology arrives, some people hop on and I can think of another college that hopped into Adobe Cloud really early and they had a lot of confusion and process trouble and software down and so students felt that. And some other colleges waited a year and a half or so and Adobe itself had worked through many workflow problems by then so that then they were in a better place.	Chair, College, TRVFJPNIA
Ensure technology is embedded in curriculum	We went down an animation tracking system a number of years ago and everybody thought this was the New Age of animation. And it was a cute system but it's a matter of you need the curriculum behind it to support it. If you don't, if there's a development cycle to it and if, for instance, one of the technologies we also tried to support was a virtual environment way back when it was just starting off and there were no backgrounds for it. So, I think pretty much in both circumstances, curriculum was not solid enough to support the technology. Students weren't really engaged with it because it was too onerous to actually do anything within the system because they really didn't understand the software that made it all work. But in anything, you've got to try it out sometimes first. But I think now what I've learned from it is you really have to make sure that all the factors surrounding it in terms of supporting it, in terms of your technicians learning what they need to know to manage it, in terms of the curriculum driving it, those have to be thought of well in advance as well and built.	Faculty, University, TVFP
Cutting edge doesn't prepare students for entry jobs in small markets	Cutting edge is great if somebody is, you know, launching in to the top of the industry that always wants the newest and latest, but our students, you know, they're going to smaller and medium-sized cities to start their career, where they're going to be dealing with only proven technology, so it doesn't make sense for us to be on the leading edge of stuff.	Faculty, College, RJA
Don't be first in, partner	Unless you are a research lab, I believe in not being the first in, in terms of education, and I also believe in partnering with outside companies who are doing things as opposed to	Dean, University, TRVFJPNIA

externally for currency	saying, “Oh, I need the latest toy!” ’cause it’s hard to incorporate it to stay current, and it’s also hard to prove that it’s actually going to be around.	
Beware of “if you build it, they will come” mentality Follow up failed risks to learn	There’s the mentality of if you build it, they will come. And I think that that has happened before, certainly, where we think that our curriculum will go in a direction. And then there’s a number of challenges there. Maybe if it’s not a core course where it’s required, then it could be that just students don’t opt to take it. Well, then you’ve invested in technology for a whole stream that people aren’t even interested in. The question then becomes, “So, why didn’t it work? Was it a lack of uptake? Was it a lack of promotion? Was it a lack of strong development in curriculum? Was it the wrong tool for the job?” There are all these motivations or reasons why we don’t know why something would have worked. But again, I think that that experimentation is not necessarily a bad thing. But it just doesn’t always pan out.	Operations Manager, University, TRVJNGIA

Impact of Unsuccessful Curricular Strategy

Findings from the educator questionnaire. Question 14 asked if respondents had ever made a purchase to support a curricular strategy that proved unsuccessful and, if so, how the situation was resolved and what would they do differently to avoid similar circumstances. Figure 14 shows 31% of respondents replied “yes,” with some variation across institutions.

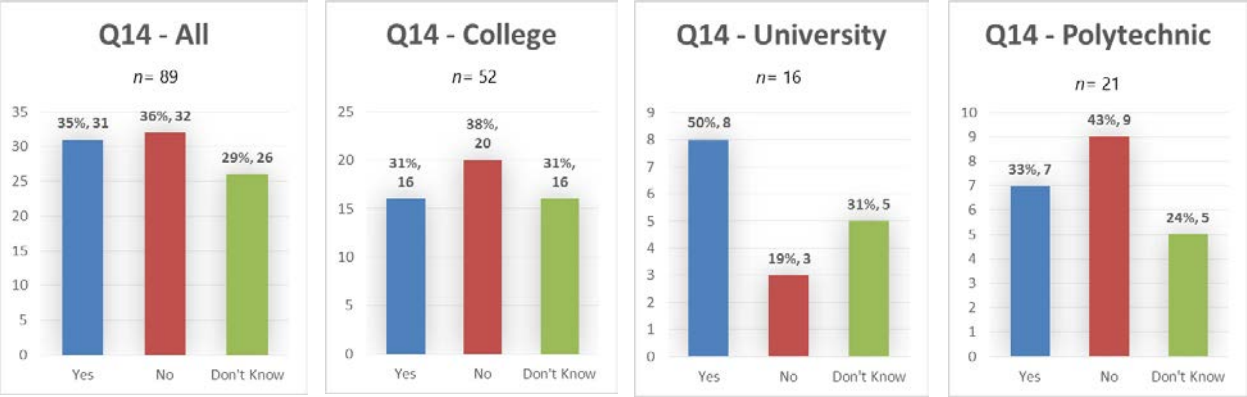


Figure 14. **Educator questionnaire: Have you and/or other individuals in your school or faculty ever invested in a technology to support a curricular strategy that did not prove successful?**

Table 17 lists respondents' investment examples and how they were resolved through repurposing of equipment where possible. Table 18 provides advice on avoiding unsuccessful investment, or on mitigating the impact of such investments by ensuring equipment can be redeployed. Ensuring curriculum is in place prior to purchase, avoiding being first in, and using research to support new initiatives were among the recommendations.

Table 17. Educator questionnaire comments: examples, investment related to unsuccessful curricular strategy

Examples	Comment	ID
3D video production	There was a push for 3D stereoscopy through a major industry grant. Fortunately, not all was wasted, as much was able to be used for post-production infrastructure. But the cameras and curriculum regarding their set-up didn't materialize as predicted.	Academic Manager, Polytechnic, TRVFJC
3D video production	A significant investment (from proceeds of a corporation donation) into 3D production and post-production equipment. With a general decrease in interest in this technology, process and aesthetics, most of this equipment was re-tasked for standard 2D production. This was a consideration that was made when purchasing the equipment originally.	Faculty, College, TVFA
Motion capture	Our motion capture studio has been a headache. Hard to keep running and use for student projects. Needs a technician attached to it.	Faculty, College, I

Table 18. Educator questionnaire comments: advice, investment related to unsuccessful curricular strategy

Advice	Comment	ID
Ensure equipment can be redeployed	On occasion, a program or course may be offered that does not capture the interest of the public. Our goal is to ensure that any technology purchased can be used across programs.	Academic Manager, College, TRJNI
Ensure curricular application is in place	I now insist that curricular application is planned prior to the innovative acquisition, at least broadly.	Dean, University, TRVFJPIA
Follow rather than lead new technology application	Try not to be a leader when it comes to new technology; instead, follow the leaders in the industry.	Faculty, College, RJA

Use research opportunities to test	Sometimes you have to roll the dice. If you don't, you are not a head of the curve, just catching up to others. We try to take these chances in research situations.	University, Operations Manager, RVFJPIA
Consult faculty	We stopped teaching/using the technology. In future, key relevant faculty or instructor would be invited to weigh in on whether such a purchase made sense based on how our curriculum works (or should work, if it should change to accommodate).”	University, Operations Manager, TRVJNIA

Advisory Board Membership and Value

Findings from the educator questionnaire. Most post-secondary media programs have advisory boards or similar groups that provide guidance on curriculum development and currency with industry, as illustrated by the Question 17 responses shown in Figure 15.

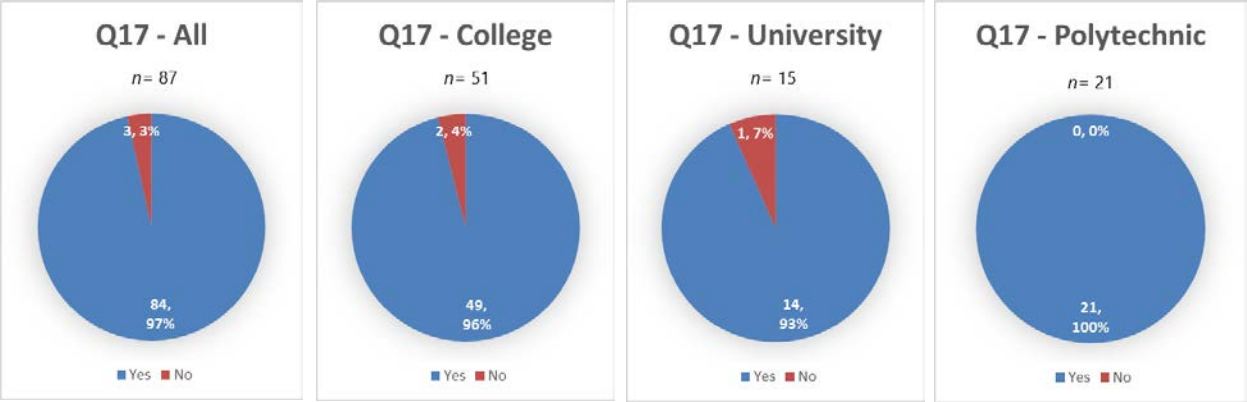


Figure 15. **Educator questionnaire: Does your program/school/faculty have advisory boards or similar groups?**

Figure 16 shows that when asked in Question18 if these advisory boards included members of media industries as well as product vendors and/or developers, all three groups were represented, with media industries representing the largest percentage. Respondents were also asked why their advisory boards were or were not made up of this mix of representatives. As seen in the sample of comments provided in Table 19, most of the discussion centred on the value of including vendors on advisory boards, with some valuing the insights provided by

vendors on new developments, and others raising concerns about favouritism and undue influence in purchasing decisions.

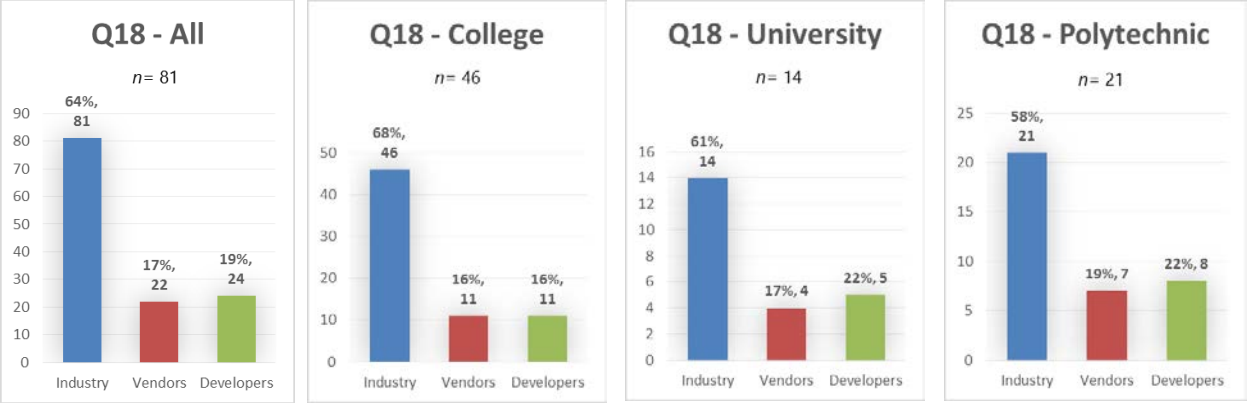


Figure 16. **Educator questionnaire: Do your advisory boards or groups include members of media industries as well as product vendors and/or developers?**

Table 19. Educator questionnaire comments: the value of vendors on advisory boards

Pro/Con	Comment	ID
Pro	Vendor participation depends on program. We expect vendors to act impartially. Vendors can be good donation sources if they know program needs and delivery.	Academic Manager, College, TRVFJPGI
Pro	To keep current and knowledgeable about the industries, all three levels are needed. Doesn't mean to give in to all of their suggestions though. This is the hard part of navigating what to implement or not.	Academic Manager, College, VFA
Pro	Our PAC board is good, but really needs to be more DIVERSE. It should include more vendors and developers and seasoned and key industry visionaries and trail-blazers from outside the local area. It currently has a tendency to be a group 'by convenience'	Faculty, Polytechnic, TVF
Pro	Industry, yes, because we have to ensure we align with what technology is currently in use. Vendors, in addition to knowing what is currently being purchased by the industry, they also have insight into what might be the future trends. They may know of technologies that exist but have not been released yet.	Faculty, Polytechnic, P
Con	I would worry that product vendors/developers might use their presence on our program advisory committee to influence college buying decisions... rather than to truly advise us on what's best for our students.	Faculty, College, RJA
Con	We include industry and academic representatives (e.g., University of Waterloo, York University). We do not include vendors as we find this generates a perspective of favouritism, i.e., if we invite	Academic Manager,

	Canon, we should invite Nikon? If we invite RED, do we invite Blackmagic? etc. Also, with ever-changing technology, the membership would also be ever-changing and lacking in consistency.	College, TRJNI

Findings from the educator interviews. Interview respondents also provided further insight into the value of advisory boards in dealing with the subject of rapid change. As with the educator questionnaire, several commented on the value of advisory board members input on curriculum development, in some cases noting that this in turn drove technology decisions. Advice on what should be covered and confirmation of the fit of proposed curricular changes with industry needs were also noted as benefits. One interview participant also raised concerns about the potential for industry representatives to unduly influence academics in favour of their own needs. Table 20 contains a sample of these comments.

Table 20. Educator interview comments: the value of advisory boards

Curriculum/Capital	Comment	ID
Capital	Whenever we're thinking about something, we ask who's using this particular technology, or this particular piece of software; and we'll get a couple of companies around the table who'll go 'Yeah, we looked at it, it's interesting, we're going to wait and see', so you know, when we had to replace a software automation system, we didn't go with what everybody else was doing because there really was no consensus at that time. Well, we got something that in hindsight probably wasn't the best choice, but it teaches the concepts, and we got it at a much lower cost than what the industry finally decided on four years down the road. So, our advisory board is an integral part of the process, they're absolutely a great reference.	Faculty, College, RJA
Curriculum	I'm not sure about the technological relationship necessarily, but it has been extremely important certainly in terms of advising about where we should go curricularly. And then tangentially, that has an effect on the technology.	Operations Manager, University, TRVJNGIA

	They might say, ‘Here is a technique that you should be talking about or an area of the business that maybe you’re not exploring as fully.’ And then we go away and explore it more fully and then say, ‘Well, what are the things that we might require in order to do that more effectively?’	
Curriculum	I think they’re very good at guiding us especially with, right now, social media use and keeping aware in that regard across all programs. It provides ‘aha’ moments where you can say, ‘You know what, that’s a course we could offer across all, and maybe save some money that way.’	Chair, Polytechnic, TRVFJNGIA
Curriculum	Advisory boards are very, very useful for us for curriculum, for seeing trends, for finding work placements for our students. They are advising, they’re not deciding on the curriculum. So if we didn’t have them, we would still have curriculum and I would be nervous if a curriculum was too heavily influenced by one provider. For example, if you were Disney and you partnered with (a post-second institution) and you wanted your grads to have certain things but it’s publicly funded money, blurred lines.	Chair, College, TRVFJPNIA

Integrating New Technologies and Techniques

Findings from the educator questionnaire. The processes institutions use for integrating new technologies and techniques into the workplace were investigated in Question 19. In addition to vendor support, consultants, and in-house workshops, respondents were offered the choice of “other” to capture any additional approaches. Respondents could choose as many options as related to their institution, and they were asked to specify if the option “other” was chosen. As seen in Figure 17, 34% of respondents chose “other.” Comments in Table 21 show that among those choosing “other,” the most common themes were self-learning, online tutorials, and PD support for attendance at seminars, workshops, and conferences.

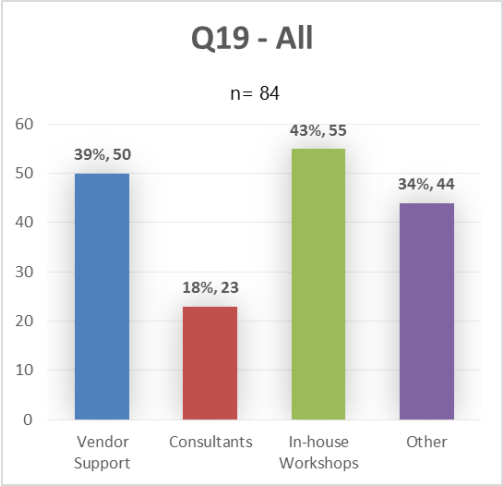


Figure 17. **Educator questionnaire: What is the process for integrating new technologies and techniques into the workplace?**

Table 21. Educator questionnaire comments: other methods of integrating new technologies and techniques

Method	Comment	ID
Peer-learning	I engage faculty and technologists in cascaded or community of practice peer-learning as much as we can—send one person for training/exposure and they cascade this along to others interested. This has enabled us to send out small 'threads' of investment that is then developed by like-minded and mutually-engaged small groups who can then advise the rest of us whether something is worth pursuing or not, and how. We've done this with drone acquisitions and processes, for example. So far, it is working well.	Academic Manger, Polytechnic, TRVFJC
Online tutorials, self-learning	Online tutorials done on our own, or we take the equipment home to learn. Some vendor training is done when purchased. Lynda.com primarily is used on our own time.	Faculty, Polytechnic, TVF
In-house training	Development of technology and techniques also happens in house and is rolled out to other faculty and staff through workshops, courses, presentations, and training sessions through the college centre for teaching and learning.	Faculty, Polytechnic, RJA
Self-learning, in house	One faculty member or tech support champions the new tech or techniques and then through ad-hoc means, slowly draws other members into additional training.	Operations Manager, University, TVFNGI

Respondents were also asked in Question 20 to comment on how successful their strategies for integration had been, and to provide examples regarding the effectiveness of their

strategies. Figure 18 shows that the majority of respondents felt confident in the effectiveness of their strategies, with 64% choosing 4 or 5 on the Likert scale. By institution, University respondents were less confident choosing, with 46% choosing 4 or 5.

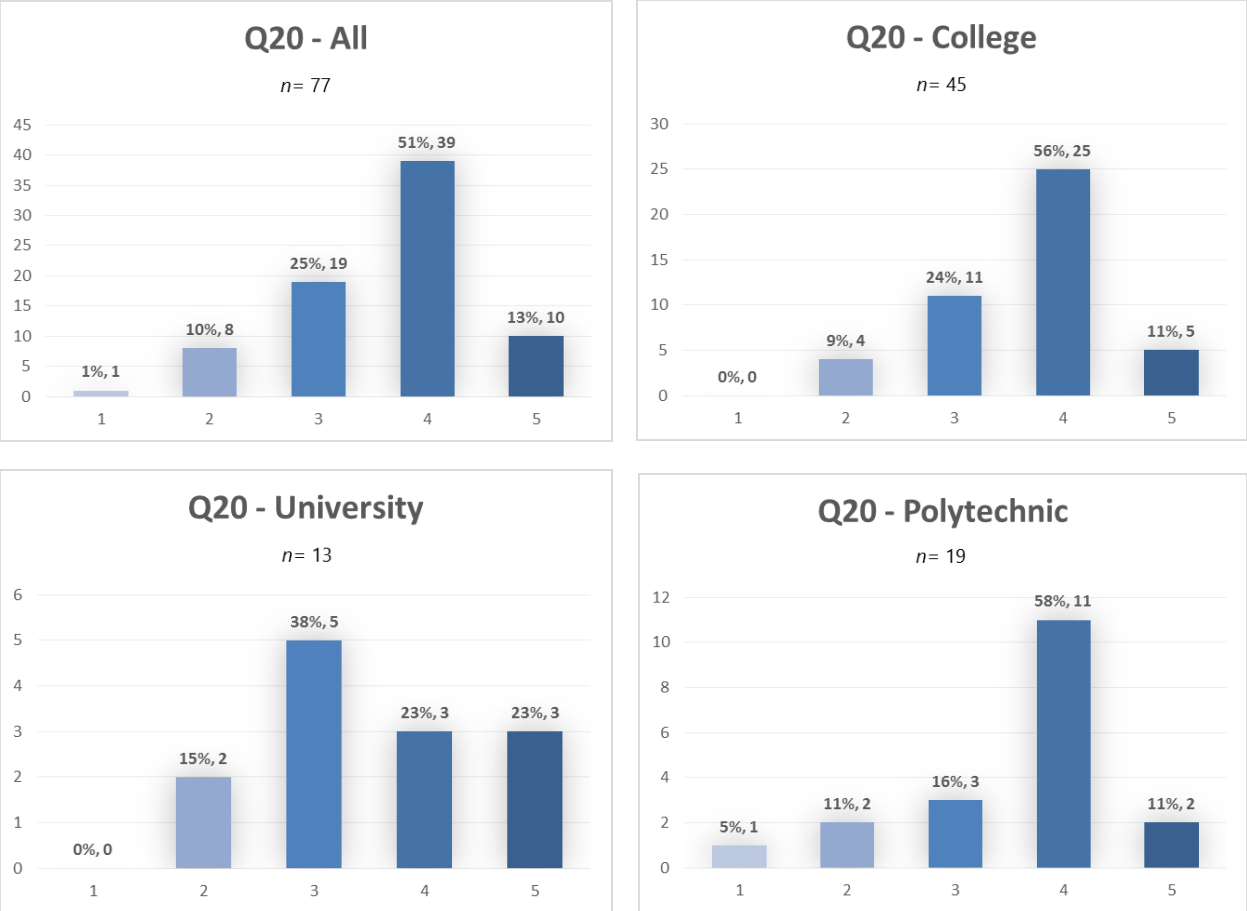


Figure 18. **Educator questionnaire: How successful has your strategy been for integrating new technologies and techniques into the workplace?**

Table 22 contains select comments from respondents regarding the perceived effectiveness of their methods for integrating new technologies and techniques, with most feeling their techniques are successful and some indicating limitations to that effectiveness.

Table 22. Educator questionnaire comments: the effectiveness of methods of integrating new technologies and techniques

Effectiveness	Comment	ID
Effective within limitations	Effective but limited by resources and time (can often only send one person), for example, Poynter Institute workshops in Florida.	Academic Manager, Polytechnic, VJPI
Effective within limitations	FT faculty and staff are usually highly engaged and will attend the workshops so they can learn the new equipment and/or software. This breaks down with PT faculty who do not necessarily have the engagement (or time) to participate. We support them by having technologists present during classroom instruction.	Academic Manager, College, TRVFJGA
Effective	Workshops on updated versions and capacities of the learning management system (LMS) would be an example of a successful approach. Introduction of Lightboard technology as a teaching/learning tool; I have produced several specific resources with it. Faculty have developed a course in accessible media approaches; I will be taking it this spring.	Faculty, Polytechnic, RJA
Effective	The college offers a reasonable slate of professional development courses that include use of new hardware/software—taught by in-house facilitators. On the other hand, when a new software package was installed in our refurbished radio master control room, the software company sent reps to teach us. Both approaches seem to work fairly well.	Faculty, College, RJA
Effective	We have technical staff who are very keen to learn (and introduce) the new technologies. They gain an understanding and then it is their job to ensure a smooth transition for wider deployment.	Operations Manager, University, TRVJNIA

Findings from the employer questionnaire. Employers were also asked to comment on their process for integrating new technologies and techniques into their operations (Question 10). Figure 19 shows that vendor support and in-house workshops were indicated as the most common approaches, with 16 and 15 out of 24 respondents selecting these options, respectively. Most respondents reported a high degree of success with their strategies, with 15 choosing 4, and four choosing 5 on the Likert scale.

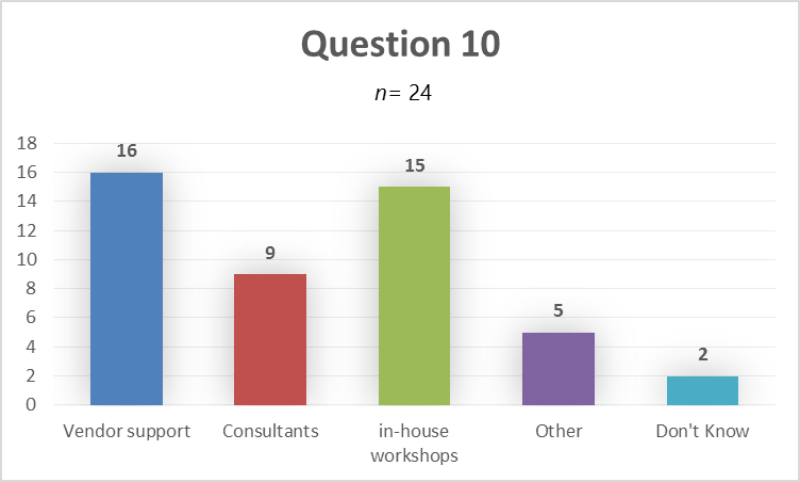


Figure 19. **Employer questionnaire: What is the process at your organisation for integrating new technologies and techniques into operations?**

As with educators, employers were asked to comment on their methods of integrating new technologies and techniques, with several noting the value of vendor and consultant support, as well as in-house and self-learning, as seen in Table 23.

Table 23. Employer questionnaire comments: methods of integrating new technologies and techniques

Method	Comment	ID
Vendors and in-house	Both (vendor support and in-house workshops) are vital to us as a rental house. We have a national training and education department that keeps up with the training of computer tech and equipment knowledge for our employees nationally. Vendor support is key to having the equipment ready and maintained for our clients.	F
Vendors and consultants	Vendors and consultants bring knowledge of how to best implement new technologies based on experience with other implementations. Internal subject matter experts are key to this process.	B
Self-learning	We ask employees to auto-didactically acquire new skills as they are required for our work. If appropriate, they will then share knowledge and techniques with others in the organization.	BWM
In-house	We provide in-house training within (national media organization) to bring staff up to speed on new technologies.	BTRW
Vendors and in-house	Usually vendors train in-house trainers and those in-house trainers carry out the bulk of employee training through in-house workshops.	BRWMI

Self-learning, in-house, consultants	Advanced colour correction via Resolve was a skill developed by one employee and then had been shared, successfully with others in the organization. Conversely, attempts to develop additional skills in VR and AR authoring via Unity have not been successful. We are currently outsourcing those functions.	BWM
Vendors, consultants, in-house	Analytics—gave everybody the tools to see in real time how we are doing with our online content. Helps us make editorial decisions quickly seeing what our audience is interested in. Has resulted in making better and faster coverage decisions for all platforms. Was implemented with vendor, consultants, and training that resulted in quick implementation and adoption.	BWMI

Findings from the educator interviews. Educator interview respondents also provided further insights on traditional training methods to help faculty and staff get up to speed on new technology and their effectiveness, as well as any of their own techniques that may not be common elsewhere. Examples can be found in Table 24, and mostly fall into the categories of peer training, train the trainer, self-learning, or a mix of consultant, vendor, and outsourcing of training.

Table 24. Educator interview comments: perspectives on training and integrating new technology

Method	Comment	ID
Limited vendor support	I think that vendor support is limited. They're more concerned from the sales perspective to getting service contracts and more purchase of seats. And they should be really concentrating on getting everybody trained up as fast as possible because for instance, if I don't like a piece of software because I don't know it, that software isn't going to get used again.	Faculty, University, TRVFJPNGIA
Peer training	There's just some peer instruction where a specialist in an area will offer training, a workshop, sometimes ad hoc, sometimes a little more formal than that in an area that he thinks that faculty might be interested in.	Faculty, Polytechnic, TF
Learn from other users	I would say potentially a user. For example, the journalism students, we sent them off to the Waterloo International Airport to learn how to fly drones.	Chair, Polytechnic, TRVFJNGIA
Train the trainer	Generally, we kind of do this train the trainer approach. Get highly functional students to be the rangers, the point of the spear if you like, to get them up and rolling right	Faculty, University, TRVFJPNGIA

	away, as quickly as possible and then in turn have them start training other students and other faculty members. I think there's a lot of value in peer-to-peer and peer-to-mentor approaches.	
Self-learning	We have faculty who just take it out and start using it. I don't know if that's an 'other,' but when we started teaching 360 video, the faculty member took out the camera for the summer and was using it and sorting it out. And so, by the time September rolled around, he's a shooter. He's someone who can shoot and write and edit and multi-skilled in many ways. And he had a handle on it by the time he came back. So, that might be an 'other.'	Faculty, Polytechnic, TRVJP
Consultant, vendor	We had nobody on staff with high-end post production background. And so, we worked with an industry partner who supported us through that curriculum development process; helped us build our curriculum, vetted it, and it's what allowed us to open our post production program this past September. Also, training, that was another key piece in terms of being able to work with them at their facility, have some of our staff go down and experience that post world; to be able to bring that back to our campus. Certainly, as part of our build, we actually hired the company to come in and help us set up, specifically our Atmos Dolby theater, because it's a very specialised field and we needed that high-end expertise.	Dean, College, TVFI

Key Challenges

Chapter 2 of this dissertation discussed several potential challenges to change that may or may not impede post-secondary institutions' ability to keep pace with rapid change in media technologies and production techniques through equipment purchase and curriculum revision. Topics examined included approval processes, the impact of research/teaching tensions, and the impact of tenure.

Approval Processes

Findings from the educator questionnaire. Question 24 asked participants to comment on the timeframe required to source, receive approval, and purchase new equipment, with

options ranging from three months to more than one year. An option of “other” was also provided. Responses varied greatly, with 32% of all respondents choosing “other”, as seen in Figure 20. The cost of the purchase and the degree to which the purchase has a champion with purchasing authority were the main themes discussed in the comments section, with selected comments provided in Table 25.

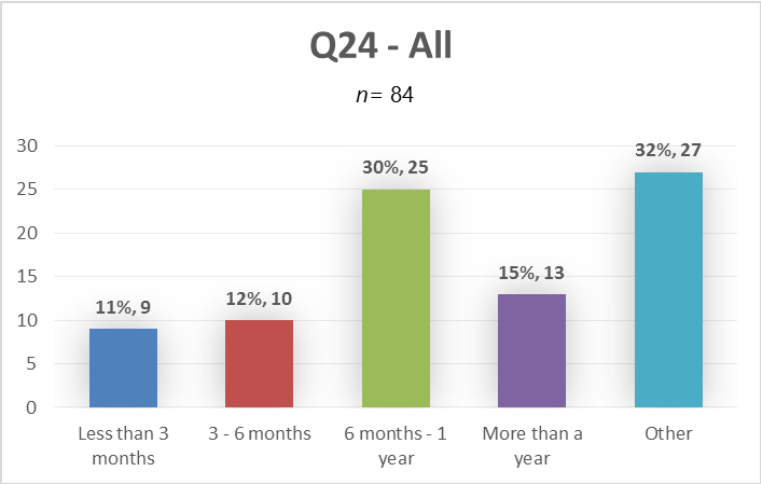


Figure 20. **Educator questionnaire: What is the time frame for sourcing, approval, and purchase of equipment at your institution?**

Table 25. Educator questionnaire comments: perspectives on capital approval processes

Perspective	Comment	ID
Depends on cost; local control up to $50,000	Depends so much on capital intricacies and range of price points, local control per purchase is $10,000–$50,000 or less per purchase. Items to tender 6 months to more than a year. If project involves renos and installs and cooperation of internal departments—purchasing, facilities, IT—can take longer than hiring in contractors—depends on a school’s budgeting and capital planning processes. Gov. funds year to year.	Academic Manager, Polytechnic, TRVFJPNGIA
Depends on scale; small equip 3–6 months, large projects up to 1 year	It depends. Big things like studio upgrades could take a year. Small stuff like monitors and even cameras, audio gear, and so on, is usually 3–6 months, sometimes less. Computers, budget notwithstanding, are more or less immediate.	Faculty, University, TVFJI
Depends on support from a senior champion	Varies widely depending on the climate and culture and the area of need. Where a powerful voice (i.e., senior faculty) is championing new technology, it can happen	Staff, University, TVRA

	relatively quickly. Where a need is not being championed by the right person, it can take much longer to get approval for funding.

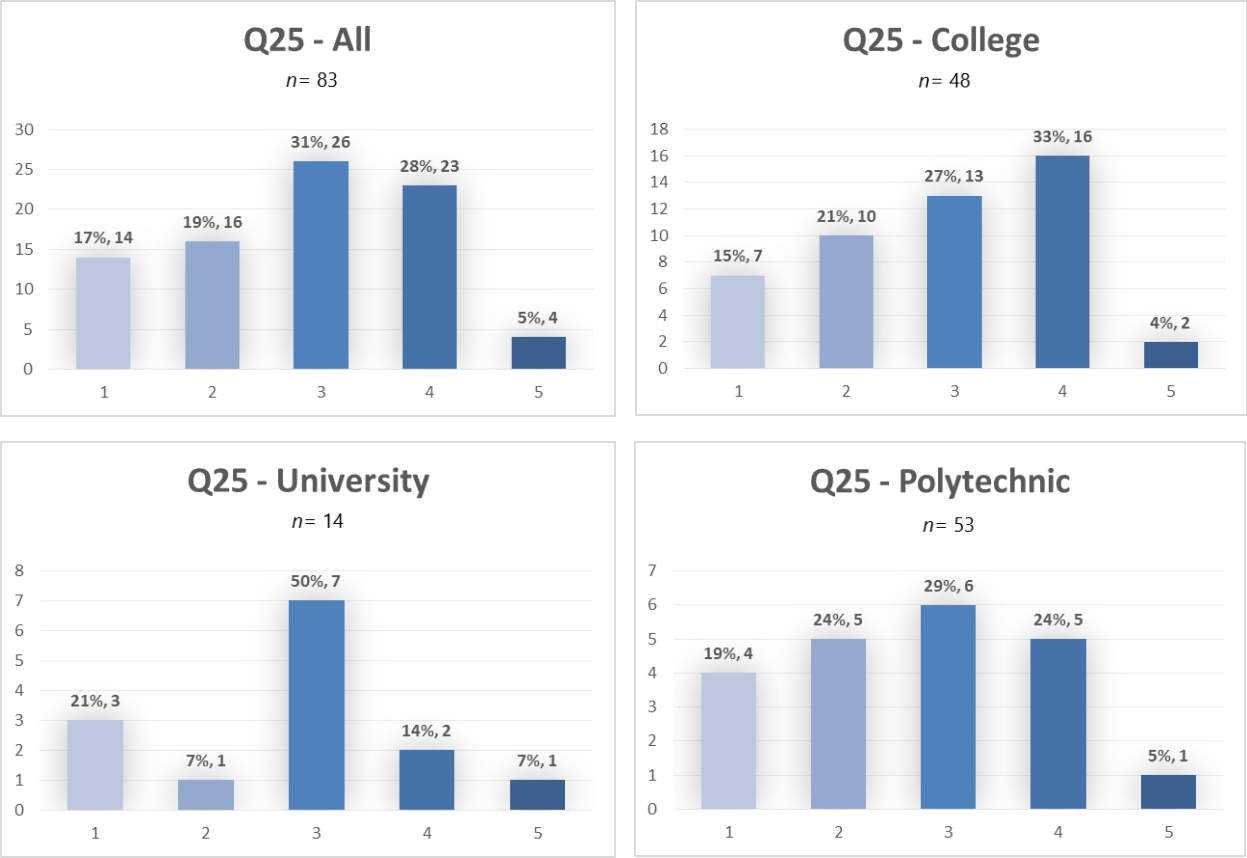


Figure 21. **Educator questionnaire: Has the approval process for purchase of new equipment interfered with your program/school/faculty's ability to maintain currency?**

Participants were asked in Question 25 of the questionnaire if the approval processes for purchase of new equipment had interfered with ability to maintain currency with media technology. The results shown in Figure 21 do not suggest any general bias overall, in that while 33% of all respondents chose 4 or 5 on the Likert scale, 36% chose 1 or 2 and 31% chose 3. However, broken down by institution, respondents working at colleges report more interference with maintaining currency, with 37% choosing 4 or 5, than their colleagues at universities and polytechnics, with Universities reporting the lowest concern at 21%.

Question 26 asked participants if the approval process for curriculum revision and program development had interfered with their ability to maintain currency in course offerings and content. As shown in Figure 22, concern in this area was greater, with 46% of all respondents choosing 4 or 5 on the Likert scale, and University respondents showing the greatest concern with 60% choosing 4 or 5.

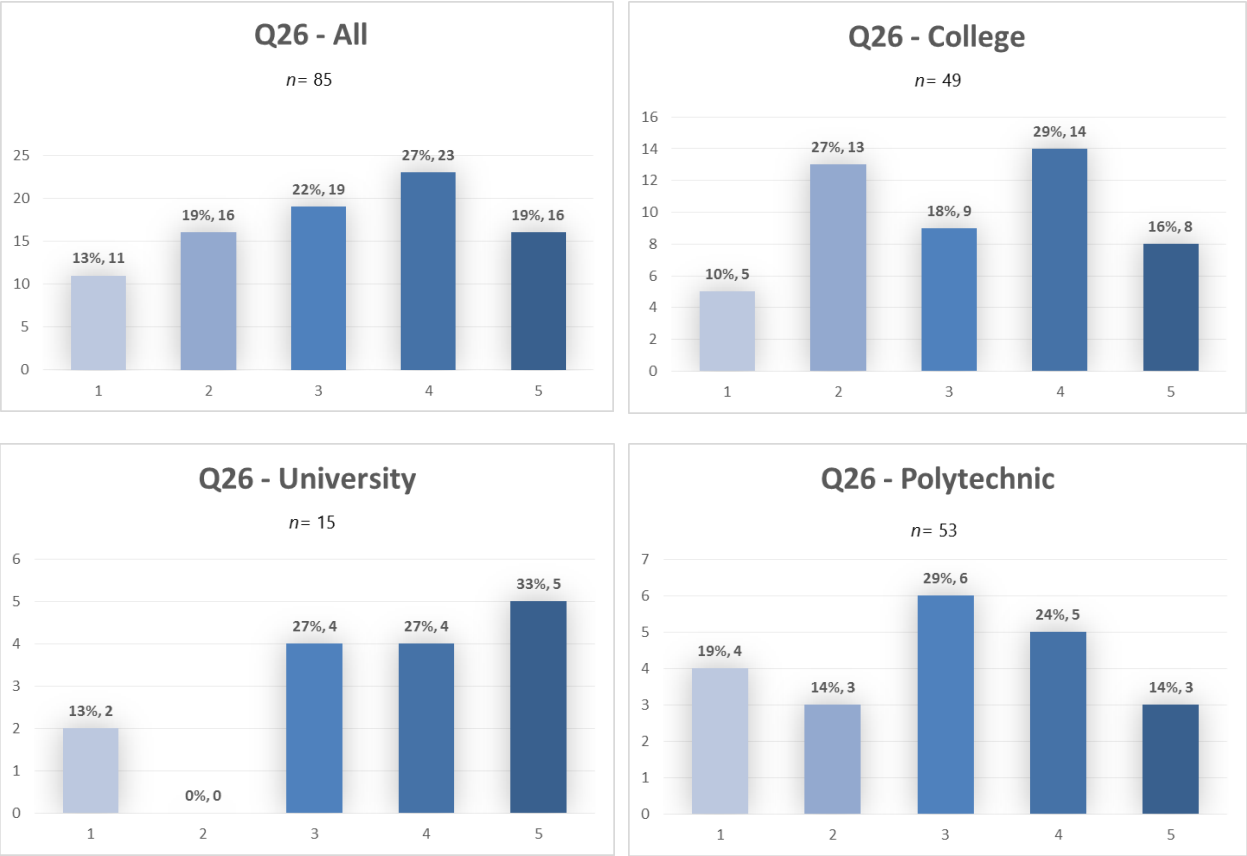


Figure 22. **Educator questionnaire: Has the approval process for curriculum revision and program development interfered with your program/school/faculty's ability to maintain currency?**

Findings from the educator interviews. Interview respondents were asked to comment on findings from the research questionnaire showing that educators, particularly those working at universities, felt that the approval process for curriculum revision and new program development interfered with their ability to maintain currency in course offerings and content. Selected comments in Table 26 show that various factors were cited as contributing to the challenge,

including both internal and governmental oversight processes, the length of the credential, and the impact of delayed launches on capital needs. Several respondents also commented on the habit of developing workarounds to deal with the challenge of restrictive review and approval processes.

Table 26. Educator interview comments: perspectives on curriculum approval processes

Challenge	Comment	ID
Long process for approval Not nimble Leads to work arounds, impacts integrity.	We have a review process here as you are aware of, that from the time you review it to the time you introduce a new curriculum, to the time that first student graduates, it's upwards to 10 years. Certainly, seven years, by the time you review it, you make the changes, you apply it, right? That's not nimble. So I think it's a broken system, I think it's a system that risks being further broken by people working around the system in order to keep it nimble, whereas there still needs to be process of academic integrity and reviews, so I think we need to kind of open it up where approvals happen more quickly, more regularly, more reviews are a lot more fluid, where there's a lot more local authority, so everything doesn't have to go to senate or this or that, but I don't know if we're going to get there.	Dean, University, TRVFJPNIA
Long process for approval Not nimble Challenge to keep curriculum and technology in sync	We're driven here again by the fact that when they start off in first year, we've got to be thinking four years down the road. So, if 4K is the next big thing, if they don't hear about it and get out in the industry by the time they're in fourth year and it's the predominant technology in their field, it's really a disservice. So, that's why I think we have a five- to seven-year replacement schedule and we try to stick to it as much as possible, we try to plan out. But then technologies come along, something beyond the cost of what we consider, and we have to go fight for the funds to put it together.	Faculty, University, TVFP
Long process for approval Not nimble Self-determination would help	I think our biggest hurdle is following the process to the letter, when you know that this is the right thing to do and you'd just like to jump to the end and get it done. And then, "No, you have to go to this committee and this committee and this committee and this committee," it becomes very frustrating when you're saying the same message over and over again to people who don't have a	Chair, Polytechnic, TRVFJNGIA

	clue on what you're saying and yet they have the ability to approve or not approve the curriculum change. There are good points to it as well. Because it does make you think, so you don't rush ahead, but overall it can be very frustrating, especially if it's a degree program and then you have to do the whole PEQAB (Postsecondary Education Quality Assessment Board) process. I think ultimately, it would be nice if PEQAB actually let us do our own self-determination and that they would do their college check-ins, because I know they've been toying around with that concept for a while. So, that would be helpful.	
Long process for approval Not nimble Need to trick the system to stay current	We tend to build our courses in very broad brushstrokes, so that underneath, it's a way to trick the system. So, we'll say, Tools for the Trade would be a name of a course. Well, that's so broadly based, and it's so broadly described in that everybody understands. "Yes. I'm going to be learning how to use mobile technology. I'm going to learn how to use a…." I'm not committed that deeply to anything on my course documentation, etcetera. Because I just write it in such a way that, if I discover the greatest, you know, HandBrake has a compression tool and it's better than the one that I've been using—oh, my God, like let's go. And Bob's your uncle, we're using it, right?	Faculty, College, J
Long process for approval Not nimble Too rigid	I had a course accidentally while I was on sabbatical, taken off the books… and when I came back, I said, "Well, no. We've got to bring it back for next year." And it's like, "No, you can bring it back for two years down the road and you have to go through this and this and this and go past the senate again."	Faculty, University, TVFP

The Impact of Research/Teaching Tensions

Findings from the educator questionnaire. Question 21 posed the question of whether research interests support or compete with teaching and learning, and asked respondents to explain their answers. As shown in Figure 23, the majority of respondents (78%) chose "support" from the two options. Results were not dramatically different when broken out by institution, although 75% of College respondents chose "support" compared to higher numbers for

Universities and Polytechnics. Responses by role were similar, ranging from 71% of Staff to 87% of Administrators choosing "support." Academic Managers and Faculty were closely matched on this topic with 79% and 74%, respectively, choosing "support."

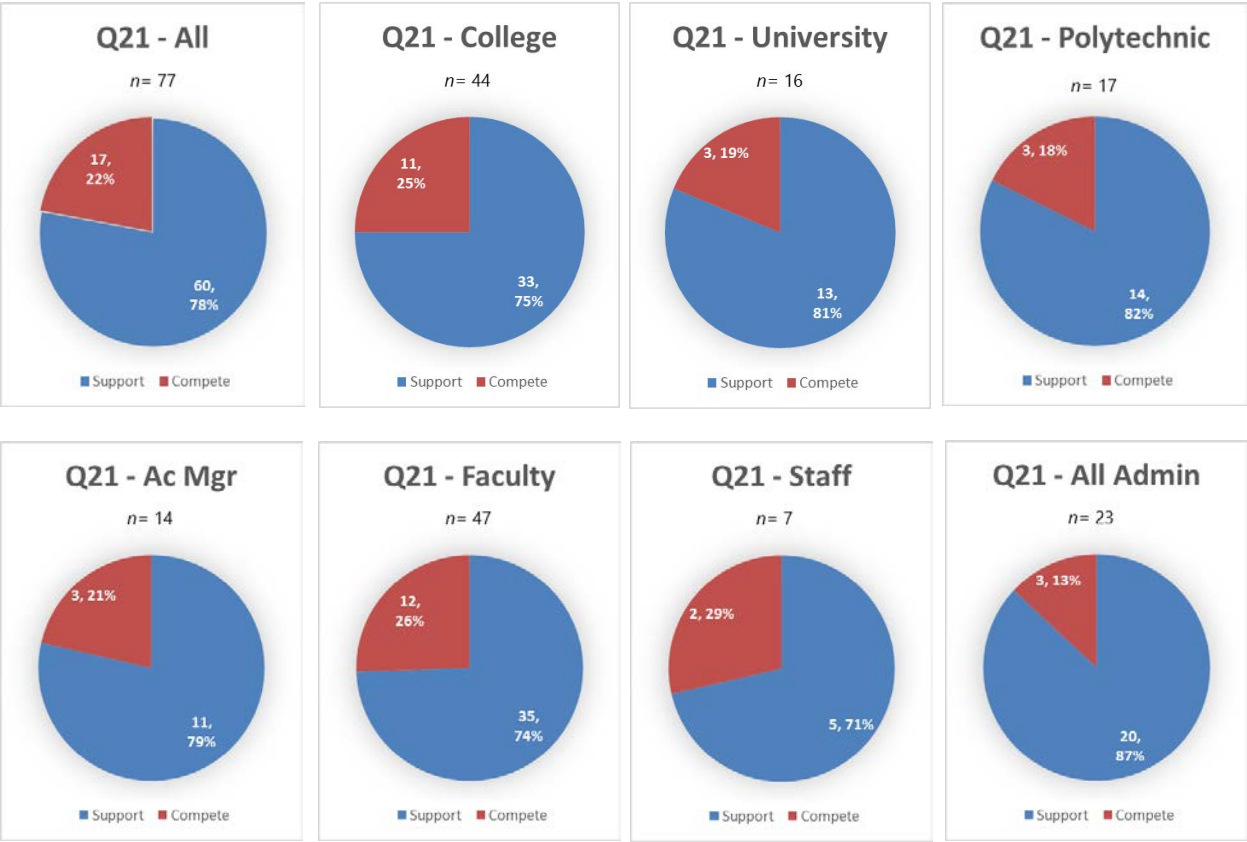


Figure 23. **Educator questionnaire: In your opinion, do research interests support or compete with media production teaching and learning?**

Common themes found among the explanations from respondents collected in Table 27 included the value of research in exploring new areas for curriculum development and funding equipment purchases.

Table 27. Educator questionnaire comments: perspectives on research/teaching tensions

Benefit	Comment	ID
Drives currency in learning, helps fund new equipment	Research is driven by the client—keeps faculty and students current. Research provides a record of learning and results—these are less trackable via curriculum. Research causes people to look for answers from different sources. Research can be manipulated to bring in new	Academic Manager, Polytechnic, TRVFJPNGIA

	equipment. Research would be improved by recognition in provincial collective agreement.	
Drives currency in curriculum	The emergence of podcasting has fueled plenty of research interest among faculty, as well as updated curriculum in our programs.	Academic Manager, University, TRVJPIA
Drives currency in student learning, applies skills of faculty with PhDs	We're fortunate to have a lot of research in both media production workflows and mobile computing technologies that operate as a doctoral research unit might—it informs and lets us expose students to that full pipeline from production to new IP. New faculty hires in some of our emerging programs are engaging in IP generating capstones, but this is mostly driven by the individual faculty who champion this and came out of PhD programs (so know what they want to pursue).	Academic Manager, Polytechnic, TRVFJC
Contributes to knowledge in new media fields	Faculty are being encouraged to research and create in the new media fields. Funding is more readily available for those projects and initiatives.	Faculty, University, F
Funds new equipment, drives currency in curriculum	We often start with new or experimental technology in research and then they become integrated into curriculum.	Operations Manager, University, TVFNGI
Drives currency in learning	This deepens the possibilities for our students and faculty to be at the leading edge of media.	Faculty, College, TRVFIA

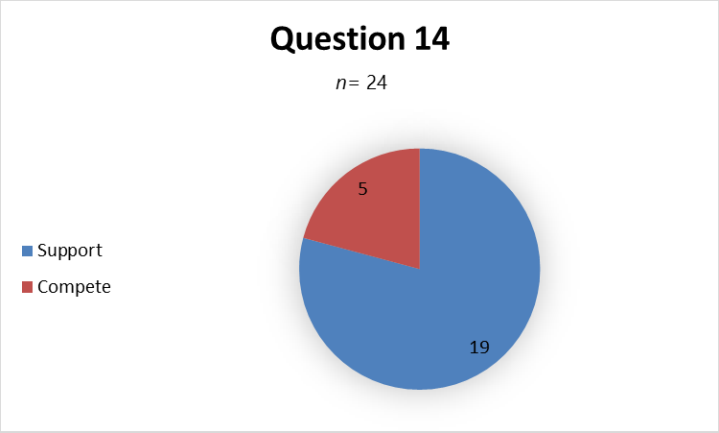


Figure 24. **Employer questionnaire: In your opinion, do research interests support or compete with media production teaching and learning?**

Findings from the employer questionnaire. As shown in Figure 24, the majority of employer respondents clearly felt that research interests support media production teaching and

learning, with 19 out of 24 respondents choosing “support” (Question 14). Among the comments listed in Table 28, common themes included the need to stay current and involving students in the critical process of investigation. The importance of relevance to curriculum was reflected in both the “support” and “compete” responses.

Table 28. Employer questionnaire comments: perspectives on research/teaching tensions

Support/Compete	Comment	ID
Support	Research is critical to support media production teaching and learning as the industry is changing quickly.	B
Support	Pushing boundaries is rarely done in circumstances where status quo and a priori are the core focus. New ideas emerge from research, not from teaching rote. Students then can learn not only more current concepts, but are exposed to the critical process of investigation.	BWM
Support	Research is the key to adapting to the new realities of our industry. Media companies could work with learning institutions on co-research projects that would aid in the survival of news organizations, especially those who cover local news.	BWMI
Compete	I think a lot of the research is doing it for the sake of doing it. It's an industry that feeds itself, and I really don't see how it actually supports media production, other than to build new apps. I think more focus should be put on data capture and data leverage, rather than just plain research.	BTRWM
Support	Research is essential to stay up with current trends but also offers post-secondary institutions a real opportunity. Facilities of learning have the time and often the resources to delve into areas of research that companies who are tied up with the day-to-day cannot get to fast enough. The best example is Sheridan's SIRT initiative, Sheridan's Screen Industries Research and Training Center. It benefits both students and the industry as a whole. They have delved into areas of research that benefit the industry as a whole and expose students to high level professionals that they would normally not get exposure to.	T

Findings from the educator interviews. Most participants in the educator questionnaire expressed the opinion that research interests support media production teaching and learning. Interview respondents were invited to comment on whether they agreed or disagreed with this

statement, and why they held this belief or not. As with the questionnaire, those who agreed cited experiential learning opportunities, developing critical thinking skills, and funding for equipment as benefits of research. Ryerson University's Global Campus Network and Sheridan College's Screen Industries Research and Training Centre (SIRT) were cited as good examples of research supporting teaching and learning in media production. Several respondents also commented on the challenge media production educators sometimes face in getting recognition for creative research projects. Selected comments can be found in Table 29.

Table 29. Educator interview comments: perspectives on research/teaching tensions

Support/Compete	Comment	ID
Support Develops critical thinking skills	Interestingly enough, coming into this program initially was like the feeling of being pressured into a bit of a research mandate. And as my thought process has evolved, I realize that a lot of the research I can do… really does play into what we're doing and how I can better help students get an understanding of the world and not just the world of media but the world in general, and how other people interact and create media content. What I've learned through the research that I've been doing and I get to give it out to my students and to share it amongst faculty and so I do think it's a critical component of what we do.	Faculty, University, TVFP)
Support Funds new equipment, provides work-integrated learning for students	It's really the best way, because you're pulling research dollars in to it to buy the technology, and you're pulling research money to hiring the students who can be guinea pigs, and then we offset that by having some of our technical support jump in, and provide some of the back end, so everybody's learning, and you have that faculty member as a champion, and you have the students as people who can then make product, so you're showing something, and our staff get to evaluate it and embed it	Operations Manager, University, TRVFJPNGIA
Supports, but recognition low for creative or commercial work	It's a struggle to recognize creative work… the fine art work of, let's say, (the) photography department, or new media, that's recognized if it's on an MFA level. But the commercial work which is actually how students learn to be media producers and content	Chair, University, TMFJPNI

	creators, that is not yet accorded the same respect. Even from people who came from that into the industry.

The Impact of Tenure

Findings from the educator questionnaire. Question 22 investigated to what extent participants saw tenure as a concern with regard to maintaining currency with technologies and techniques. Figure 25 shows that roughly two-thirds of all respondents (66%) did not see tenure as a concern, while approximately one-third (34%) did. However, breaking down the results by institution shows that the majority of University respondents (60%) do see tenure as a concern, while the majority of respondents at Colleges and Polytechnics do not. Sorted by role, no group expressed a majority concern over tenure, although Academic Managers and Administrators as a whole expressed a higher degree of concern than Faculty or Staff.

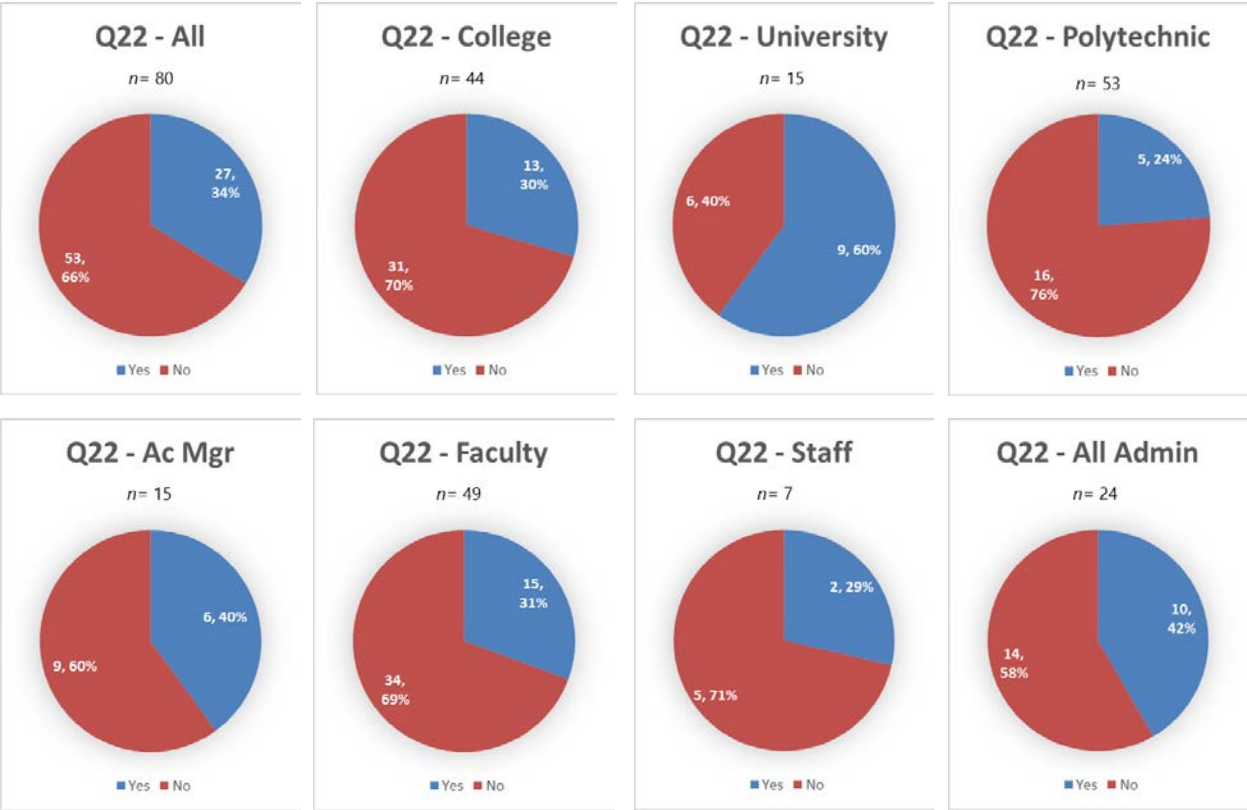


Figure 25. **Educator questionnaire: In your opinion, is tenure a concern with regard to maintaining currency with technologies and techniques?**

Comments under Question 22 came from both “yes” and “no” respondents. Many felt that the major factor in remaining current was the individual’s self-motivation, and reported having professional, engaged, and enthusiastic faculty at their institutions who remained current, as illustrated by the comments listed in Table 30.

Table 30. Educator questionnaire comments: perspectives on the impact of tenure

Concern	Comment	ID
No	Majority of faculty are professionals who stay current. They need help of time to stay current and $ for renewal of resources. A few get into a rut of teaching same thing over and over. One suggestion to correct is mandatory sabbatical between years 10 and 15.	Academic Manager, Polytechnic, TRVFJPNGIA
Yes	Tenure (or full-time status in general) can be a drag on individual initiative. Active management has occasionally been necessary to collaboratively generate milestones and learning goals to help some faculty advance. In other cases, faculty can gravitate to 'non-tech' courses or roles that reduce the chance that they'll face a class with content that has evolved without them. Very tough for media faculty, in particular those who didn't jump on the digital turn from the outset.	Academic Manager, Polytechnic, TRVFJC
No	I have found that, in general, FT faculty remain engaged and current up to the years that they begin pondering retirement. There are always one or two that require encouragement to maintain currency.	Academic Manager, College, TRJNI
No	Tenured faculty need to be open to the change and enjoy the challenge of it including the research aspects that help bring about that change. Our tenured faculty purposefully bring in research projects and workshops, etc., so that they keep current as well.	Academic Manager, College, VFA
No	At our college, we hire faculty who are enthusiastic about keeping up with their industry, and it hasn't been a notable problem that faculty who have been around for many years are not maintaining their currency.	Dean, Polytechnic, TRVFJPNGIA
No	I think it's the individual versus tenure that determines currency for technology and technique. But tenure can be a problem if the instructor is not open-minded or if professional development is not supported.	Faculty, Polytechnic, J

Findings from the employer questionnaire. When employers were asked in Question 15 whether or not they saw the practice of tenure in post-secondary institutions as a concern with regard to maintaining currency with technologies and techniques, their responses were almost evenly split (see Figure 26). Twenty-two participants responded to this question, with 10 choosing "yes" and 12 choosing "no." Selected comments in Table 31 show that among those seeing it as a concern, the most common theme was the risk of complacency at both the individual and program level. Those choosing "no" emphasised the need for faculty to explore and innovate and noted a distinction between the intent of tenure and the reality of individuals' need for self-motivation.

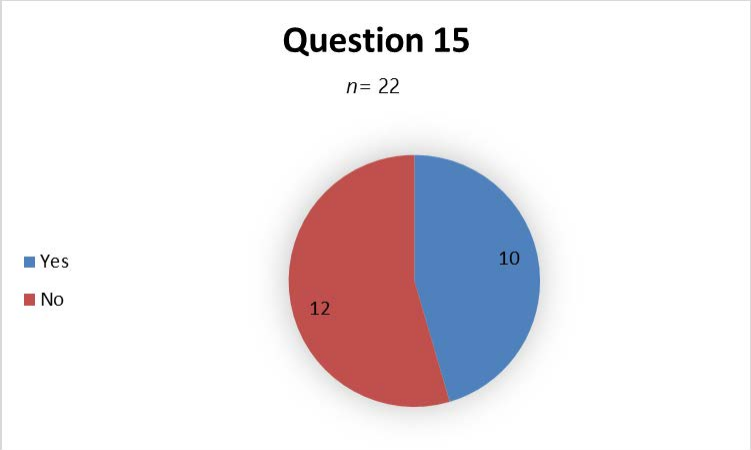


Figure 26. **Employer questionnaire: Do you see the practice of tenure in post-secondary institutions as a concern with regard to maintaining currency with technologies and techniques?**

Table 31. Employer questionnaire comments: perspectives on the impact of tenure

Concern	Comment	ID
Yes	Although my recent experiences show that many educators are making an effort to keep current, this is not always the case.	B
Yes	Many media schools teach media theory and practices that were relevant 20–30 years ago. At (a university), I guest-taught a course on social media and using data to produce content, and the students said they've never been taught any	BTRWM

	of that. They were mostly focused on learning film and television.	
No	Tenure has never been more important. The academy must have broad freedoms to explore and innovate, even in areas not considered valuable or controversial.	BWM
No	Tenure is a fundamental backbone of the post-secondary system and must be protected. There is no reason to believe that instructors and professors cannot learn and adapt as well as colleagues in the industry. In addition, most institutions employ sessional or part-time instructors from the industry to teach many of the skill and craft courses, which ensures that classroom practices are current.	ER
Yes	It stultifies academics; fosters complacency; does not incentivize life-long learning—or if it does, it does it at a low level. We need futuristic thinkers and innovators in the business of content creation.	BCETRWMF
No	Tenure is intended to protect the integrity of independent thought so I don't see a direct linkage with the maintenance of currency. The larger issue is complacency and a resistance to change. That's very much a human behavioral characteristic and one I witness everywhere irrespective of whether or not your job is 'secure.'	BTRWM

Findings from the educator interviews. As with research, interview respondents were asked whether they agreed or disagreed with educator questionnaire findings that showed that roughly two-thirds of respondents felt that tenure was not a concern with regard to maintaining currency with technologies and techniques, and why they felt that way or not. Interview respondents' comments were mostly in keeping with those from questionnaire respondents, and noted that outcome depends on the individual's motivation (see Table 32). Additional comments were made about the meaning of currency in relation to active practice, the value of tenure in research, and the importance of the recruitment process.

Table 32. Educator interview comments: perspectives on the impact of tenure

Perspective	Comment	ID
Depends on the person Some may have lulls	I think there are a few people who get too tired and they don't upgrade and that's troublesome, but lots of people love their work and they keep going current. Or they might even have a dormant period where they chill for five years and then they chrysalis emerge again with something new. And if the percentages are getting higher than 50 percent, then the management needs to look at what can I do for these people to help them.	Chair, College, TRVFJPNIA
Depends on the person Practicing doesn't necessarily mean currency	Again, it depends on the person. We have many tenured professors who are still current and they're very active. But the concern is, they don't have to be. That's the concern. Is there anything requiring them to do this? No. And so, I could see how that's a legitimate concern. Just because you're practicing, doesn't mean you're practicing what's new. It could just mean you're still practicing the thing that you had been doing for 30 years.	Operations Manager, University, TRVJNGIA
Depends on the person Freedom to explore a huge benefit	For me it gives me a comfort level in knowing that I could take some chances in pushing the boundaries. And if I make a mistake or something, and you learn the greatest from your mistakes, so you have the opportunity to make those mistakes and potentially to make some major gains.	Faculty, University, TVFP
Depends on the person, and openness to research outside of comfort zone	Hopefully, we're hiring people where tenure doesn't mean they can coast… I think in this day and age, it's really not a choice, I think we all need to remain current enough technologically and application-wise to be able to actually do what we like as well, like the core. It's kind of like having been in the television business and not owning a TV.... You can't be in media production and not care about technology, not care about what's happening and how it's evolving, and sometimes tenure might give us that sense of academic freedom, which we have, that says 'I'm only interested in research into what I want to address, which is just this narrow area', and I think that could make us into dinosaurs if we're not careful.	Dean, University, TRVFJPNIA
Depends on the person Personal involvement in industry can be	It so depends on the individual. I've got some great faculty who have been long serving members who are probably some of the most current people that we have, and I've also experienced some fairly short-term employees who hadn't had a long time with us, who may have been the most out-of-date. So, it really depends on the individual.	Dean, College, TVFI

a strong motivator	I would say 95% to 98% of our folks stay current, want to stay current. And in the media area, it's because they're still living it in their own lives, they're not out of the industry and now teaching. They are professors with the college, but they're also personally still invested in the industry.

Possible Approaches to Dealing with Rapid Change

Several topics were discussed in Chapter 2 as potential approaches to addressing the challenges post-secondary educators face in keeping pace with rapid change in media production technologies and techniques. Participants were asked to consider: the value of adopting the European model of three-year degrees to move students into the work force more quickly; the importance of courses currently being taught, or in development, related to digital literacy; what leadership style(s) might best support keeping pace in an environment of rapid change; and whether or not becoming a learning organisation (LO) would be of benefit in adapting to rapid change.

Three-Year Degrees

Findings from the educator questionnaire. Participants were asked in Question 23 if they would favour a three-year model for media production undergraduate degree programs in Canada, and were also asked to explain why or why not. Figure 27 shows that respondents overall were almost evenly divided on this question, with 53% choosing yes and 47% choosing no. However, when reviewed by institution, College and Polytechnic respondents expressed strong support for three-year degrees, with 65% and 57%, respectively, choosing yes, while Universities were not supportive with 88% choosing a no response.

This question evoked considerable comment from questionnaire participants, as seen in Table 33. Major themes arising from the comments offered spoke to the purpose of the education provided, and pathways of students taking programs.

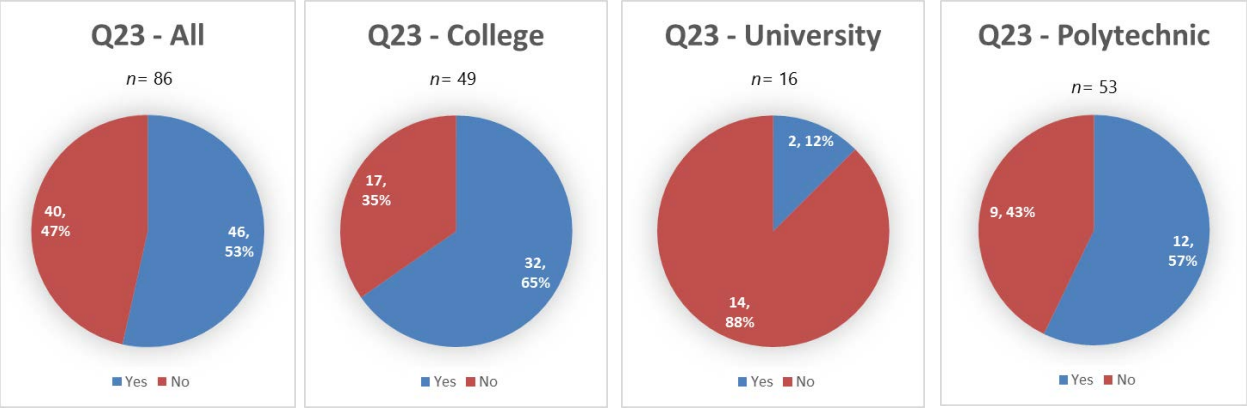


Figure 27. **Educator questionnaire: Would you favour a three-year degree model for media production undergraduate programs in Canada?**

Table 33. Educator questionnaire comments: perspectives on three-year degrees

In favour	Comment	ID
No	Three-year degrees in Ontario have always been “dead end” degrees because they precluded going on to any graduate school. Lobbying for the three-year degree for media production doesn't resolve the problem of what the learning outcomes should be, course by course, as they will still need to be 'degree-level' learning. There are enough Honours four-year degrees in the province now to suggest we can build capacity to keep our technical threads going within the four-year experience, much like (unnamed institution) has done for years now, or other professional schools like Engineering, Nursing, or Pharmacy have also done for years.	Academic Manager, Polytechnic, TRVFJC
No	A three year model would likely result in the removal of the liberal studies/humanities/general education courses. This action does not promote global citizenship and results in graduates who have a much narrower field of knowledge.	Academic Manager, College, TRJNI
Yes	Gets grads into the workforce sooner. Could be very attractive.	Dean, College, TRFJPNIA
Yes	Three years is a valid amount of time to learn media production. Two years is not enough to truly master a technique or hone one's skills. Four years, on the other hand, is keeping students away from the "real world" for too long.	Faculty, Polytechnic, P
Yes	Valid for students who don't plan on any post-graduate academic work. Those who are "only" industry-bound. An upgrade pathway (three-year to four-year) would be vital.	Faculty, University, TVFA
No	We recently moved from a three-year media diploma to a four-year bachelor's program. The three-year program was actually two and a half years with a term of industry placement. It was	Faculty, College, T

	well-suited to training basic skills and placing individuals in the workforce as technicians. The four-year program provides a greater opportunity for students to learn media history, theory and develop their critical analysis skills. All of which hopefully provides a grounding for a greater range of opportunities in media.	
No	We need the four years to cover all the (increasingly) vast media angles, techniques, and emerging technology. We expanded to four years originally because there was so much to cover—now, it's even more so.	Faculty, University
No	We've been there and I think a four year UG (undergraduate) degree gives us a leg up on what a College can offer and allows for an easier path to post graduate.	Operations Manager, University, TRVIA
Yes	Potentially gets the student out into the workforce sooner than a four-year program, and just a wee bit longer than our present two-year diploma program—so more time to fine tune skillset.	Faculty, Polytechnic, TVFNIA

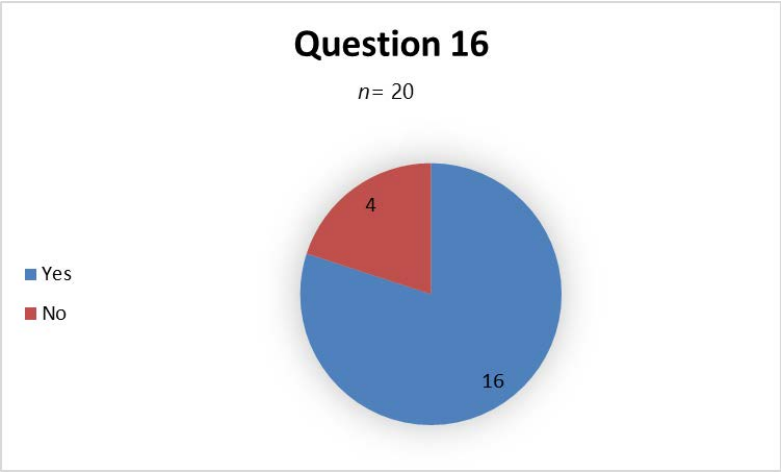


Figure 28. **Employer questionnaire: Would you favour a three-year model for media production undergraduate degree programs in Canada?**

Findings from the employer questionnaire. Figure 28 shows that 16 out of 20 respondents to the employer questionnaire indicated favouring a three-year degree model for Canada, while four respondents did not (Question 16). The major theme arising from comments, shown in Table 34, was the need to get students out into the workplace quickly; however, both

“yes” and “no” respondents noted concern over the amount of time required to be fully ready to enter industry.

Table 34. Employer questionnaire comments: perspectives on three-year degrees

In favour	Comment	ID
Yes	I believe that Media Productions studies should provide an overview of the industry with internships and ultimately employment providing the in-depth training. I feel that three years provides sufficient hours to achieve this goal. As a parent, I can also appreciate the tremendous cost of education and a reduction in the cost opens up post-secondary education to a broader group.	B
No	It takes four years to get comfortable creating and being able to work from a solid foundation towards nimbly recognizing and adopting new and emerging storytelling platforms, technologies, and techniques.	BWM
Yes	Technology is changing so rapidly, getting them out into the real world sooner is better for the industry and employees/employers. Again, teach them attitude and appreciation for learning the new tech. Stress the importance of it and steer them in the right direction.	F
No	Universities are institutions of higher learning, not craft schools or trade schools. If you just want the craft, we have many colleges that offer those skills in one-year and two-year programs. Universities should strive to do more.	ER
Yes	I would prefer to see a concentrated push to teach the basics over three years followed by continuous learning opportunities on an annual basis than the current structure.	BTRWM

Findings from the educator interviews. In the educator questionnaire, overall response was almost evenly split on the question of whether or not participants would favour a three-year degree model for media production programs in Canada, although by institution the majority of College and Polytechnic respondents favoured three-year degrees, while University respondents did not. When asked for their perspective on these results, interview respondents again spoke about the difference in role between Colleges/Polytechnics and Universities, and emphasised the

need for sufficient time if critical thinking was seen to be an important learning outcome.

Selected comments can be found in Table 35.

Table 35. Educator interview comments: perspectives on three-year degrees

Perspective	Comment	ID
Depends on purpose of the program	If you're a point and click program—and I don't mean that to be pejorative about that, but I mean a program which is more of a hands-on apprenticeship in terms using technology for production—then three years is sufficient. But if you're expecting people to be analytical, to have business chops as well as management abilities, then I think you do need the four years.	Chair, University, TMFJPNI
Could work for theory-based programs	If it's all theory-based, then a three-year degree is fine. I think, because we have three-year advanced diplomas here so that's what they're considering is equivalent almost. And the universities are looking at these three-year advanced diplomas more and more and giving more accreditation if they transfer over to university. I think if we could squeeze it in, and we could get three-year degrees, I'd be all for it. I mean, yes. Life is moving so fast and yes, they want people out in the workforce as fast as possible and I think it would benefit people. Some people. Not everybody, but some people.	Faculty, Polytechnic, PIVA
Additional time spent with students in four years is valuable	My perspective is that I appreciate the extra time with the students. I appreciate the fact that you get the advantage of maturity. In those years of a person's life, those are years of pretty rapid maturity and so from high school to graduating from college or university. So, we see, and I appreciate the additional maturity and what you can do in terms of programming and curriculum when you have four years.	Faculty, Polytechnic, TF
System works well as it is with choice between	Do I think universities should go from a four-year to a three-year? Absolutely not, you know, the university system has been proven for over a hundred years and works really well for a lot of students. The college system has been around Ontario for 50 years and works really well for a lot more students. I'd say keep it as it is.	Faculty, College, RJA
Less than four years ok for practical, not depth in academics	I think four years is appropriate for a bachelor degree. I know that in the college system, we do a good job, an excellent job, of training journalists in a practical sense. We don't have as much depth on the academics. And so, when I look at our Bachelor of Journalism, I think four years is appropriate and it gives a bigger grounding in academics.	Faculty, Polytechnic, TRVJP

Teaching Social Media, Transmedia, Digital Literacy, and Computer Science

Findings from the educator questionnaire. Chapters 1 and 2 discussed the emergence of new forms of storytelling such as transmedia, and the skill sets needed to be successful in today's media production environment, such as digital literacy and computer science. Educators were asked if their program, or any program in their school or faculty, offered or planned to offer courses in social media, transmedia, digital literacy, and computer science. Social media and transmedia were selected by 81% of respondents, while digital literacy was selected by 59% and computer science by only 23% (see Figure 29).

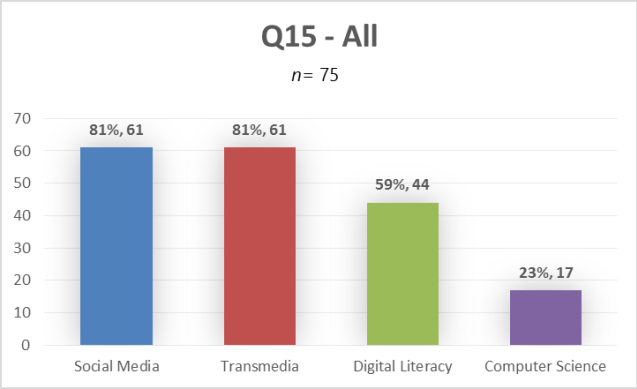


Figure 29 **Educator questionnaire: Do you currently offer, or plan to offer, courses or modules in social media, transmedia, digital literacy, or computer science.**

Social media was recognised as being important and was identified as being taught by the majority of respondents. While an equal number of respondents selected transmedia, supporting comments suggest that not all respondents interpreted transmedia according to the definitions provided at the outset of the questionnaire. Only a slight majority chose digital literacy, but those who did saw it as very important. Only a small number chose computer science, although many saw value in basic coding skills. Table 36 shows a selection of comments provided by respondents that relate directly to each of the areas of study chosen.

Table 36. Educator questionnaire comments: the value of teaching social media, transmedia, digital literacy and computer science

Area of study	Comment	ID
Social media	Finding this increasingly core to all media education, for both student 'brand' development and capacity to promote/create content that flows across multiple social, mobile and legacy channels.	Academic Manager, Polytechnic, TRVFJC
Transmedia	Not titled this way but several projects cross media platforms or are multidisciplinary.	Academic Manager, Polytechnic, TRVFJPNGIA
Transmedia	With cross-program collaboration, students have the opportunity to tell their stories across multiple platforms. With more financial support, we could afford more opportunities and expand our approaches to multiplatform storytelling.	Academic Manager, College, TRJNI
Digital literacy	Digital literacy is important for the economy and is also integral to our fields of study. Communication trends, user experience, interaction design, research and data visualization are taught in our programs. We offer a new grad certificate program in interaction design.	Academic Manager, College, TRJNI
Digital literacy	As you have defined it, applies in various courses I teach including Radio news reporting and production; being able to work with any device, any software, to get the story reported. Critical to have students think technology will not stop them; they'll find a way around the challenge.	Faculty, Polytechnic, RJA
Digital literacy	File naming, server maintenance, transmedia, networking are all part of the future of media studies. Some students are fortunate if specific teachers bring these into their courses. Requires a different type of teacher and need for PD.	Academic Manager, Polytechnic, TRVFJPNGIA
Computer science	Not seen as valuable. Beyond the scope of what our students need to know to be successful.	Faculty, Polytechnic, P
Computer science	So many of the systems that drive the media field today are moving into the IT realm. The greater understanding they have of broader technologies, the more useful they'll make themselves professionally.	Operations Manager, University, TRVJNIA

Findings from the employer questionnaire. To assess the value of teaching social media, transmedia, digital literacy, and computer science to students studying media production, employers were asked if social media and transmedia were important aspects of their business

strategy, and if they saw digital literacy and computer science as important aspects of an employee's skill set.

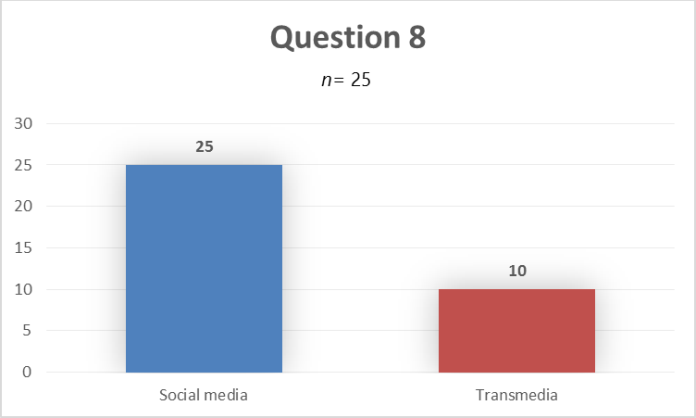


Figure 30. **Employer questionnaire: Indicate the importance of social media and/or transmedia in your business strategy.**

As shown in Figure 30, 25 out of 25 respondents chose social media as being important, and 10 out of 25 also chose transmedia as important aspects of their business strategy (Question 8). Respondents' comments featured in Table 37 suggest that some saw social media as a driver to traditional platforms, while others saw it as an additional means of content distribution. Those who also chose transmedia debated its definition and value in terms of mere extension of distribution channels versus extended storylines.

Table 37. Employer questionnaire comments: the importance of social media and transmedia in business strategy

Area of study	Comment	ID
Social media, transmedia	Social media serves to deliver the product to diverse audiences and hopefully bring viewers to the core television product. Transmedia can serve to monetize content in multiple ways.	B
Social media, transmedia	Transmedia (depending on how you define it) is less important if you are considering transmedia from the Jeff Gomez storyworld building definition. However, if transmedia means putting content on multiple platforms, and finding efficient ways to do that, then it's a very important component.	BTRWM
Social media, transmedia	Social media is the front line connecting individuals to content. It's also the medium that maintains relationships in our digital age. Transmedia is important for us because it allows stories to be told at different tiers of engagement and commitment and	BWM

	allows the consumer to experience the story in a way that gives them as much or as little agency over the narrative as they choose.	
Social media, transmedia	As a legacy broadcaster, it's obvious the future of moving images is on digital. Content needs to be cross-platform by definition. And growth is conditional on reaching audiences where they are.	BTRWM
Social media	Social media certainly helps to direct people to our main product which is TV and radio. And social media allows us to have added value content that we wouldn't be able to put on TV and radio.	BTRW
Social media	Rapid updates to viewers. Generally used to drive to online or linear platforms.	BT

Twenty-five out of 25 also indicated that digital literacy was an important part of an employee's skill set, while only seven out of 25 also chose computer science (Question 9), as shown in Figure 31. The main theme among respondents' comments, seen in Table 38, was that digital literacy is an absolute necessity for potential employees in the media sector. Computer science was seen as important only for specific roles, although even those respondents who did not choose computer science suggested that coding, such as HTML, is an asset.

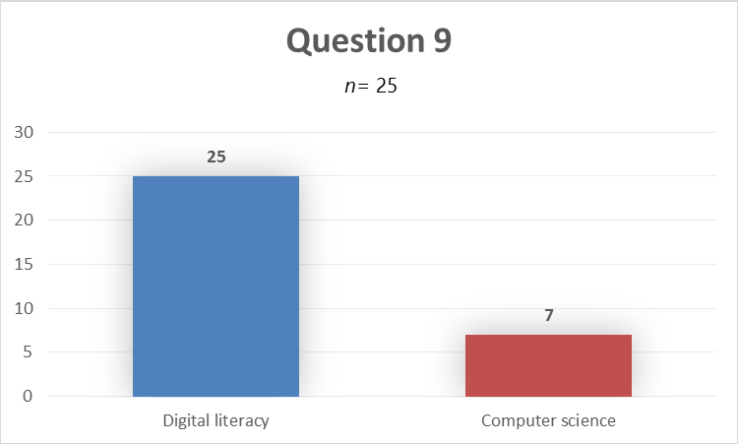


Figure 31. **Employer questionnaire: Indicate the importance of digital literacy and/or computer science in an employee's skill set.**

Table 38. Employer questionnaire comments: the importance of digital literacy and computer science in employee skill sets

Area of study	Comment	ID
Digital literacy, computer science	Looking beyond creating content solely for television broadcast is mandatory and employees must be literate in various technologies to fully appreciate this. Not all employees need a computer science background but must be well versed on core applications that are part of their work.	B
Digital literacy	Digital literacy is a broad requisite for creating content. I see computer science as being specialized. If a role requires technology development, then of course CompSci is an obligatory skill alongside digital literacy, but both skill sets are not required for all employees.	BWM
Digital literacy	I don't think computer science is a necessity. That said, basic coding skills are always a plus.	BETWMF
Digital literacy, computer science	Every journalist is now a digital journalist. Newspaper reporters now shoot video; magazine writers do podcasts; web writers take still pictures; audio producers design web pages. And knowing some basic HTML is a vital skill to have as well.	ER
Digital literacy, computer science	On the production side, digital literacy is now considered mandatory. This is less of an issue with new hires than it is with incumbents. On the technology side, classic Broadcast Engineering skills are largely irrelevant in today's media landscape. A cross between IT and Media is what is really required, and few people seem to have that skillset.	BTRWM
Digital literacy, computer science	Digital literacy is the new knowledge base that allows a company to move beyond what they have done in the past as strictly a traditional supplier of content. It is the way you gain the skills to properly set your strategy and present your company and your content for presentation on the internet and other emerging technologies. Some level of computer science knowledge particularly in html coding and design is very helpful in the changing digital landscape. The ability to design (and) maintain your internet presence as well write code for custom apps is an essential. Companies may opt to have this service supplied by a third party rather have it as in-house service, but it must available to any company hoping to keep a competitive edge.	T

Findings from the educator interviews. Commenting further on the findings from the educator questionnaire, interview respondents agreed that there is value in teaching coding, and

suggested collaboration with computer science programs might be an effective way of exposing students to ways in which computer science intersects with media technology. Selected comments appear in Table 39.

Table 39. Educator interview comments: Why not teach computer science?

Consideration	Comment	ID
Coding important, not computer science as a whole	Although social media, transmedia and digital literacy all use computers, it's like a car. It's like using the car versus building the car and I see computer science like building the car so that might be why it's aside. Coding is using the car so I would see coding as being in there. And I understand the principles of it. Coding is the future. Coding is literacy. It's a different kind of literacy.	Chair, College, TRVFJPNIA
Computer science is a small part of media industries Suggest collaboration with other faculties	In media it's a very small segment that will actually work with those systems and that's why I thought if I got a number of faculties together including computer science, there'll be a core of co-students that are really interested in developing the skill set. And then we could have people that could go into working with these environments in our studios, so they can see the application of what they're doing. So, that might be a bit more interesting.	Faculty, University, TVFP
Rather than teach computer science, collaborate with computer science faculty for delivery	You've got a heavy programming element to it, and so in a faculty like ours, we're a very creative arts faculty, we do have a lot of technology that some of our schools teach more than others. That is where there seems to be a gap in how we deliver that type of curriculum, because the students that are maybe in our media production program, or a creative industries programs may want to do that, but unless they have that knowledge and they're bringing that knowledge in to how to code, how to design, how to develop, there's not necessarily a connection within our university where it should be. So computer science and a faculty of communication and design need to be more inter-linked. And I think that's a drawback from… the system… not allowing an easy way for those two schools, or two faculties to be able to interlink together.	Operations Manager, University, TRVFJPNGIA

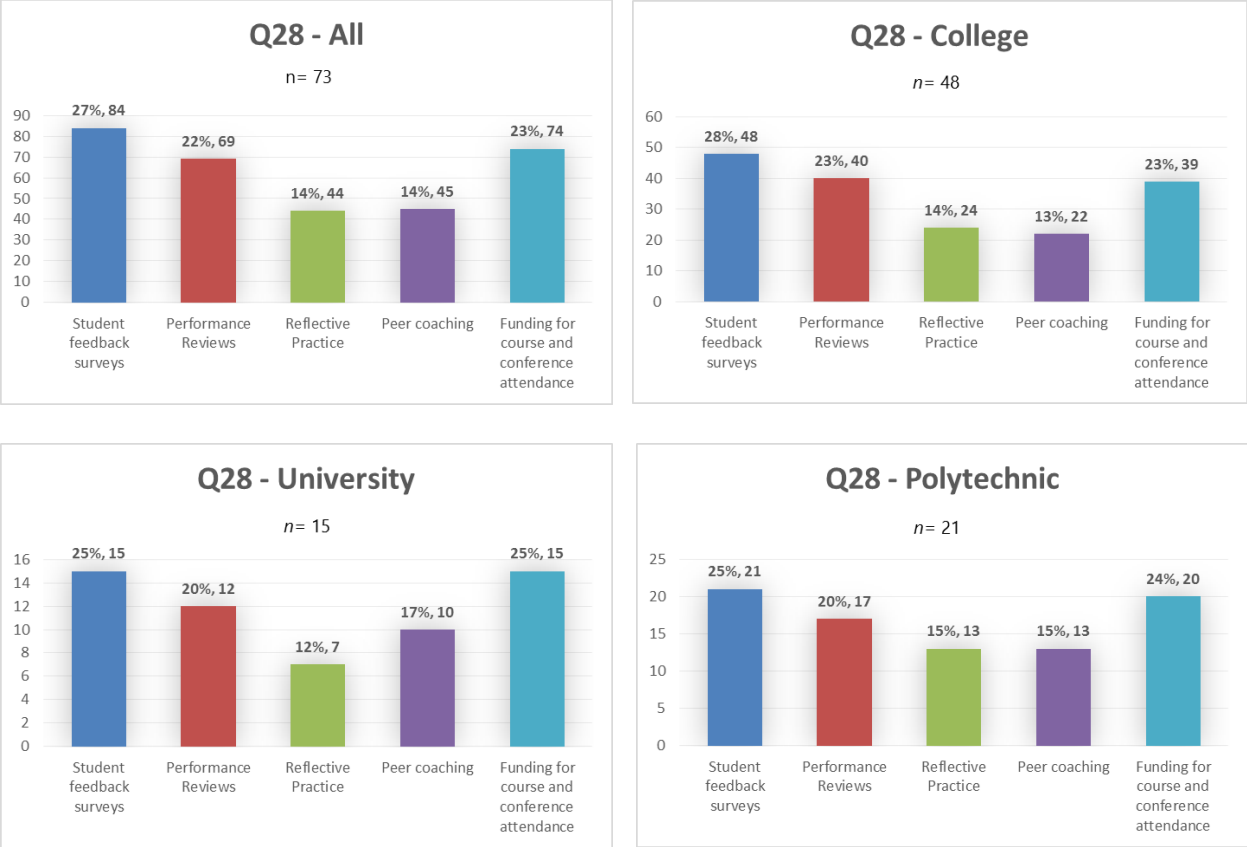
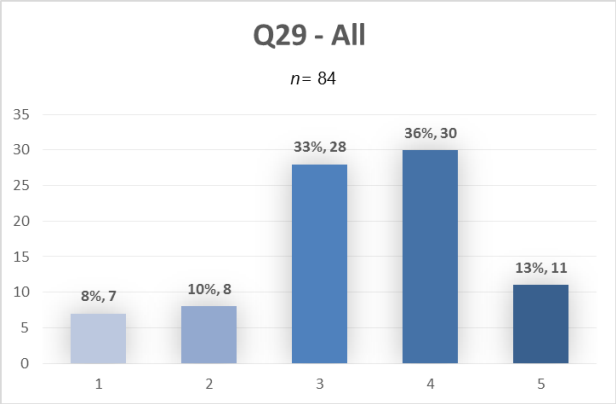


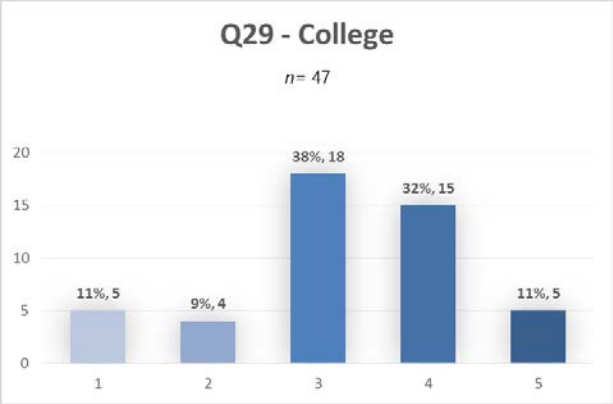
Figure 32. **Educator questionnaire: Does your institution employ any of the following PD activities?**

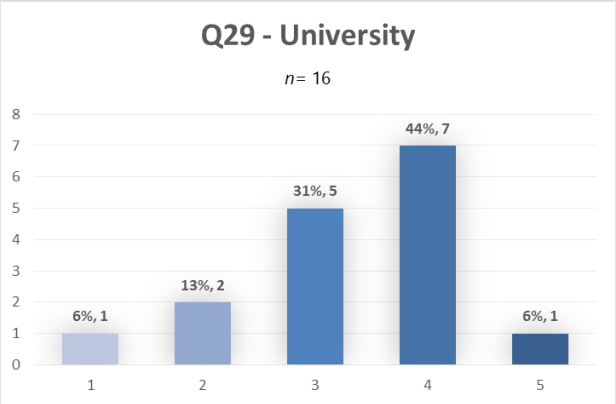
Learning Organisation

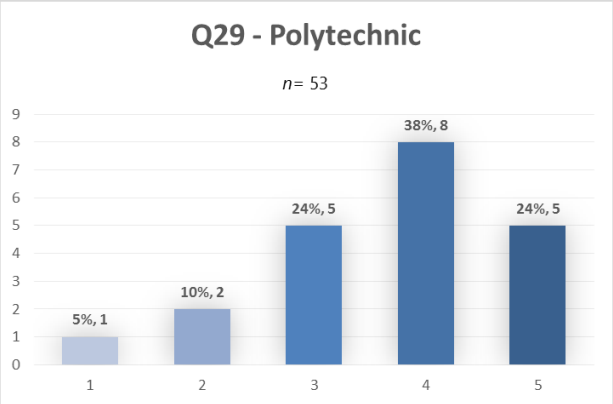
Findings from the educator questionnaire. In Chapter 2, PD was identified as a component of an LO. Questions 28 and 29 asked participants if they employed any of the following PD activities, and to what extent they believed these activities were effective.

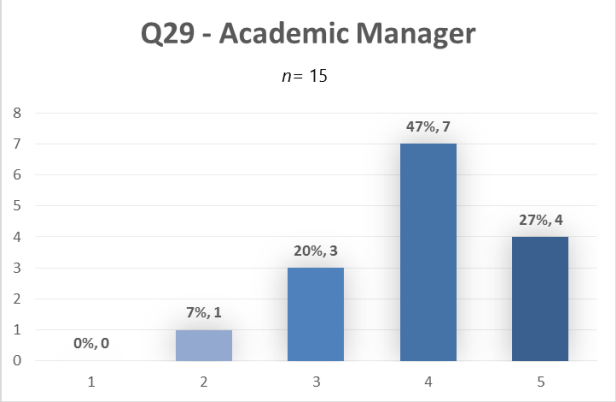
- Student feedback surveys
- Performance reviews
- Reflective practice
- Peer coaching
- Funding for course and conference attendance
- Other (please specify)

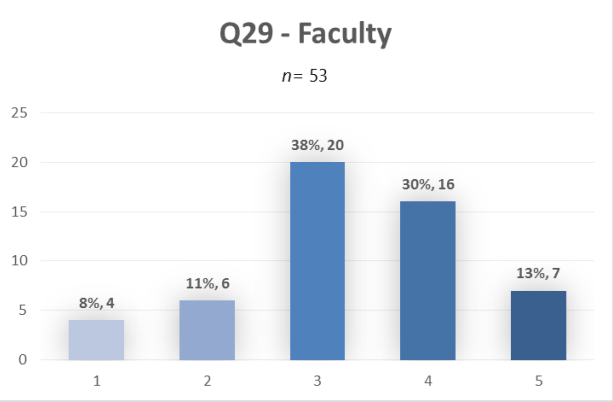

Q29 - All
n= 84
35
30
25
20
15
10
5
0
8%, 7
10%, 8
33%, 28
36%, 30
13%, 11
1
2
3
4
5

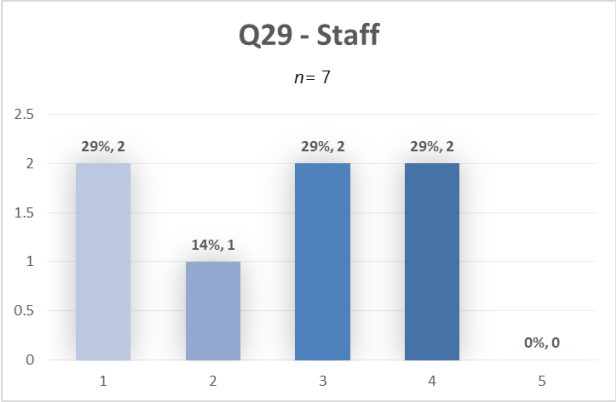

Q29 - College
n= 47
20
15
10
5
0
11%, 5
9%, 4
38%, 18
32%, 15
11%, 5
1
2
3
4
5

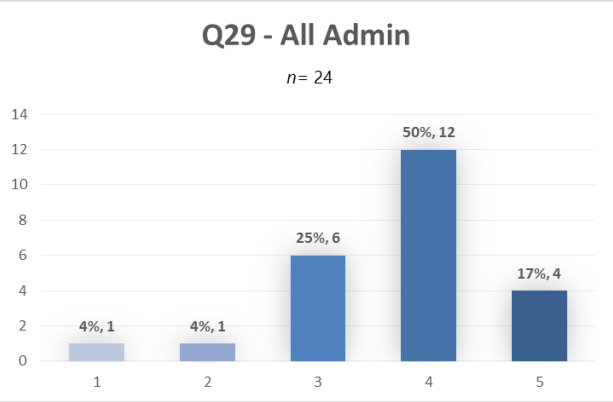

Q29 - University
n= 16
8
7
6
5
4
3
2
1
0
6%, 1
13%, 2
31%, 5
44%, 7
6%, 1
1
2
3
4
5


Q29 - Polytechnic
n= 53
9
8
7
6
5
4
3
2
1
0
5%, 1
10%, 2
24%, 5
38%, 8
24%, 5
1
2
3
4
5


Q29 - Academic Manager
n= 15
8
7
6
5
4
3
2
1
0
0%, 0
7%, 1
20%, 3
47%, 7
27%, 4
1
2
3
4
5


Q29 - Faculty
n= 53
25
20
15
10
5
0
8%, 4
11%, 6
38%, 20
30%, 16
13%, 7
1
2
3
4
5


Q29 - Staff
n= 7
2.5
2
1.5
1
0.5
0
29%, 2
14%, 1
29%, 2
29%, 2
0%, 0
1
2
3
4
5


Q29 - All Admin
n= 24
14
12
10
8
6
4
2
0
4%, 1
4%, 1
25%, 6
50%, 12
17%, 4
1
2
3
4
5

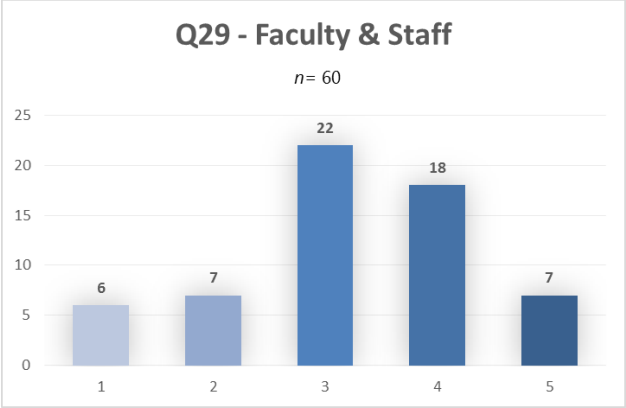


Figure 33. **Educator questionnaire: To what extent are the PD activities described in question 28 effective in helping faculty and staff remain current?**

As seen in Figure 32, student feedback questionnaires, performance reviews, and funding for course and conference attendance were cited as the most common forms of PD. Under "other," a number of respondents described in-house training from teaching and learning departments.

With regard to the effectiveness of PD activities, Figure 33 shows that 49% of all respondents chose 4 or 5 on the Likert scale, with 33% choosing the neutral position of 3. Broken down by institution, Colleges expressed the least confidence in the effectiveness of PD, with 43% choosing 4 or 5 on the Likert scale, while Polytechnics expressed the greatest confidence, with 62% choosing 4 or 5 on the scale. By role, Academic Managers expressed the greatest confidence, with 74% choosing 4 or 5 on the scale, while Staff expressed the least confidence, 29% choosing 4 and none choosing 5. Taken as a whole, all Managers compared to all employees, 67 % of Administrators chose 4 or 5 on the Likert scale, while 43% of Faculty and Staff chose 4 or 5, demonstrating a potential disconnect between management, faculty and staff with regard to the effectiveness of PD.

Comments from participants suggested funding and personal motivation are contributing factors to perceptions around the value of PD. Selected comments can be found in Table 40.

Table 40. Educator questionnaire comments: the effectiveness of PD

Effectiveness	Comment	ID
Not always valued in union environment	In a unionized context, professional development becomes optional and is sometimes seen as an imposition rather than an opportunity for improvement.	Academic Manager, University, VFI
Attendance at product and technique workshops valuable	Sending faculty to workshops and trade shows exposes them to new procedures and technologies. As example, Sony did a one-day workshop on how to use a couple of their new cameras, which we ourselves had just purchased. This allowed the faculty who went to be completely comfortable and familiar with the cameras so he can teach the students at the level they require.	Academic Manager, College, VA
Lack of support drives lack of interest	Conferences/workshops/seminars are approved on a case-by-case basis. There is very little PD funding available, so most faculty don't bother asking for any, and if one is approved, the faculty member may be asked to pay for some of the costs (meals, for example). However, attending PD opportunities is important for faculty to stay current.	Faculty, College, J
Lack of support drives lack of interest	Extremely low budgets available across the school allow for only a select few approvals for PD that involves seminar budgets, travel, or professional memberships.	Faculty, College, RJA
Depends on individual motivation of faculty and staff	PD activities, and the extent to which they are effective, are largely a function of personal desire and determination to remain current. The college can assist but can't instill in faculty a desire to remain on top of industry and pedagogical development.	Faculty, Polytechnic, J

Findings from the educator interviews. With PD having been identified in Chapter 2 as a component of an LO, interview respondents were invited to comment further on the findings from the educator questionnaire that showed a potential disconnect between management and staff regarding the effectiveness of PD. A sample of respondents' responses in Table 41 indicates that perceived value of PD is often related to the type of PD offered, the degree to which PD is supported by the institution, and the time commitment involved.

Table 41. Educator interview comments: the effectiveness of PD

Perspective	Comment	ID
Depends on focus In-house workplace training not appreciated	I think professional development has a negative connotation for a lot of people and I think that that's in part because what do you mean when you say that? Do you mean you need to be up to speed on the latest and greatest software on a thing or do you mean you should be taking more leadership seminars or seminars in equity, diversity, and inclusion? And certainly, if we're talking about the latter things, I've noticed that there's a lot less uptick in interest in those areas than there would be in the more hard skilled professional development-related things.	Operations Manager, University, TRVJNGIA
Lack of support drives lack of interest	There isn't a lot of opportunity to go somewhere and have your expenses paid and feel like you're there representing a college. There are lots of opportunities to go and do things that you're on your own dime and that's what ends up happening, more often than not.	Faculty, Polytechnic, VJPIA
Time, effort involved drives lack of interest	I think faculty here are a little reluctant to get involved because it's work, it's time, it's effort on top of what they already do. And I always make them do a report back. So, they're more reluctant to just go out and do that.	Chair, Polytechnic, TRVFJNGIA
Heavy investment for little payoff	Realistically, I've been through so much professional development and lectures and conferences and everything and realistically, I may bring 10, 15 percent of what I know into the program or upgrading myself.	Faculty, Polytechnic, PIVA
Lack of alignment with research interests may diminish value	We don't have to be presenting any paper or research to attend. So, I wonder if that has an effect that people can choose something that they're not necessarily invested in with the research interest with publication and go and find that it's not the best use of their time.	Chair, Polytechnic, TRVFJPNGIA
Official recognition, requirement to present drives interest	We'll survey right after the events. And most of even the business ones now will actually get a proper PD course code and we'll have our faculty register through our PD area… so then they have a survey mechanism that they will rate them… so that's the most official way.	Dean, Polytechnic, TRVFJPNGIA

Interview respondents were also presented with Pedler et al.'s (1989) definition of an LO and were asked to comment on whether or not they thought their institution fit the definition of an LO, and if becoming an LO might be of any value in dealing with the challenge of rapid change. Several respondents suggested their institution did fit the description of an LO or was in

the process of becoming an LO. Most felt being an LO would be beneficial in dealing the challenge of rapid change. Selected comments can be viewed in Table 42.

Table 42. Educator interview comments: perspectives on becoming a learning organisation

Beneficial?	Comment	ID
Yes: universal approach to work	I think that our organisation would benefit from transforming into a learning organisation, which wouldn't take that much work, and becoming a digitally embedded organisation, so more universally, so there is work that could be done. However, it needs time and people and a plan and a champion and all of that sort of stuff.	Chair, College, TRVFJPNIA
Yes: all parties engaged in learning	Absolutely. Because you have to be learning in order to deal with change. I'll give you an example. Next term, I'm launching a negotiations course… And I'm scared… because I am going to be using artificial intelligence as part of this course. And this was because I went to a workshop on using artificial intelligence in the classroom, a presentation. I said, "That would work really well for a negotiations course." That's a small example, but the more we have those kind of small examples where the professors are learning about new skills and new technology, in this case AI, or new ideas, the richer the experience for the professor and for the student	Chair, University, TMFJPNI
Yes: value in learning along with students	I think it's about expectations. If you work at an institution where the expectation is that you are constantly learning along with the students, and if you work at an institution where it's okay to admit that in a way, that you don't know it all, that you're on a learning curve as well.	Faculty, Polytechnic, TRVJP
No: reiterative and reflective, but not anticipatory	I don't know whether that process, as necessary as it is, really helps us stay on top of the changes… It's reiterative and reflective in a lot of ways, but at the curriculum level, and it doesn't anticipate what's next as well as it might… There are all these mechanisms in place, but the process by which we become seers of the next generation of students and what they will need, I don't know if it's very well served by that process alone. So, I think we're moving in the right direction, but I don't know that it answers all the questions.	Faculty, Polytechnic, VJPIA

Leadership

Findings from the educator questionnaire. Participants were asked an open-ended question regarding the role of leadership in maintaining currency in technology and curriculum. Selected comments are listed in Table 43. The major themes arising from respondents' comments were the need for consultation with faculty, championing budget needs, and providing vision for the overall direction of the school and program. Some respondents also commented on the importance of leaders not getting distracted by the latest "shiny toy."

Table 43. Educator questionnaire comments: perspectives on the role of leadership in adapting to rapid change

Role	Comment	ID
Listen to faculty, use consultants, get out of the way	Listen to your faculty who are usually dual professionals. Use consultants who you trust. Then get out of the way. Don't be the red tape that hinders student learning.	Academic Manager, University, VFA
Listen to faculty, drive the discourse, take initiative	They must listen to faculty, drive the discourse, take the initiative to integrate new technologies where appropriate.	Faculty, College, TVF
Provide vision	Somebody needs a vision for what's essential and what's not.... It often takes a leader to provide this.	Faculty, College, JP
Let faculty lead	It should come from the faculty; academic leaders are too inclined to chase after the latest shiny toy.	Faculty, University, F
Provide financial support	They are a huge part of the process. College profs/programs do not have budgets; therefore, all monetary requests must be approved by administrators.	Faculty, College, J
Facilitate timely response	Enabling quicker response to changing trends and needs in the workplace.	Faculty, College, RJA
Avoid impulse buying	Flexibility, understanding of the way the industry works, avoiding the impulse to invest time, energy and resources in 'the shiny new thing.'	Faculty, College, TFP
Support with actions	Leadership must be committed to currency if it is to be maintained—supported with actions, not just words. A mission statement is not the same thing as acting on this commitment.	Staff, University, TRVA

Findings from the educator interviews. Interview respondents were also asked to comment further on what role they saw leadership playing in maintaining currency in technology and curriculum, and whether they saw transactional or transformational leadership as being more effective in dealing with the challenge of rapid change, based on Smith and Bell's (2011) definition of the two management styles. Most saw the role of leadership as very important when dealing with rapid change, particularly in the areas of providing vision, resources, and support (see Table 44). Table 45 shows that most also viewed transformational leadership as the favourable approach to achieving the goal of maintaining currency. However, several respondents felt that both transactional and transformational leadership were needed as part of an overall successful strategy to maintaining currency.

Table 44. Educator interview comments: perspectives on the role of leadership in adapting to rapid change

Role	Comment	ID
Provide vision	Leadership has to have a vision. They have to know where they're headed. Have to know where the curriculum is headed. Have to buy the right things at the right time. Constantly evolve the curriculum and the technology and the software so that the right learning is happening.	Chair, College, TRVFJPNIA
Provide support and resources	The role I see leadership playing is one of support and one of providing the resources to allow that to happen. But also, prioritising specific strategic goals related to the institution to further that agenda.… It's very infrequent that I see any reference to like, "It's important that we have state-of-state technology." That kind of thing is not explicitly stated anywhere. But what they do say is that it's a goal of the university that the schools provide relevant and exceptional experiential learning opportunities.... I think that that's an avenue that one could use to say, "What they mean when they say that is that we should have adequate tools to be able to teach them relevant skills that are going to be helping them when they are working in the spaces, whatever those spaces are."	Operations Manager, University, TRVJNGIA

Provide vision, support recommendations from advisory boards and industry	It's really an important role and it's a really tough role. And it's really necessary because if you don't have somebody who has a vision—a really great vision—as to where curriculum should go, what my students need, it will get mired down and it will be reiterating what was done 20 years ago. So, you really need people who are going to say, "No. This what we need to do. Here's what our students are asking for. Here's what our PAC says is needed in the industry… here's what's happening out there in what's called the real world."	Chair, University, TMFJPNI
Provide big picture perspective to avoid silos	I think it's the big picture piece, being able to manage all areas… I think as leader you can see how things could be shared or what directions the school is going into. Without that leadership piece, I think it would be a lot of silos buying the same equipment that the other silos are buying and not looking left and right.	Chair, Polytechnic, TRVFJNGIA

Table 45. Educator interview comments: perspectives on transactional versus transformational leadership in adapting to rapid change

Transactional vs. transformational	Comment	ID
Transformational at the top, supported by transactional below	It has got to be transformational. It has to be, and that has to be at the top, and if it's not at the top then there is no real ability to do transformational leadership from below. But, there is space for both, so I see transformational happens at the top, there's a core group of leaders that are leading that element, and there's people that are transactional leadership that are doing that because that's at the core of what happens in an operation is transactional—this needs to be done, it's done, check, done, move next—you can't make change without transformational leadership.	Operations Manager, University, TRVFJPNGIA
Transformational	Any system where they have to intervene and come down and dictate because they don't think you're hitting the ball the right way, I have a problem with that. And I think that's what we face here, and I have worked in places where, or have worked here when we've had leadership that's more transformative, not completely, but more. And I find that much better because there's more of a, 'we're in this together' and 'we're amongst peers,' rather than somebody's going to come down and dictate.	Faculty, College, J

Transformational	On a university level, the transactional doesn't work. For the really great teachers, the great researchers and the people who are dealing with technology really well, you can't reward them. And for those people who are not doing that, you can't punish them. So, you have to be transformational. So, you have to lead by example and by enthusiasm.	Chair, University, TMFJPNI
Transformational	For rapid change, I would say transformational. If you're expecting things to be the same way they were four years ago, you're going to be sadly disappointed, and it's not just in post-secondary education or it's not just in the broader section of media, it's in life. So, if you want to be nimble and be able to change rapidly, you need to have somebody who creates the environment that change is good, as opposed to change is something to stress over	Faculty, College, RJA
Transformational supported by transactional	I hate to pick…. If I did have to pick it would be transformational, but we are in a very transactional environment, so to me it's strategic transactions and the reason you're doing the transactions is knowing you're shifting the culture. I actually live in both, I totally live in both. It's like I'm pushing this transformational culture, I hire people that are rowing in the same direction, I reward the successes that come as the culture changes, but the way to get people to do it internally is a lot of carrots, and the carrots aren't going to be, you know, they have to fit a particular mold. But the reason why I'm doing the transaction is totally to do the transformation.	Dean, University, TRVFJPNIA

General Advice

Findings from the educator questionnaire. The final question in the educator questionnaire asked participants what advice they might have for their colleagues in meeting the challenge of rapid change in technologies and techniques. Selected comments are listed in Table 46, demonstrating the following major themes:

- Stick to the basics (fundamentals of storytelling and production techniques)
- Get out of the classroom for PD.
- Look to external sources of revenue

- Collaborate with other institutions and industry
- Avoid jumping in too fast where new and potentially untried technology is concerned.

Table 46. Educator questionnaire comments: general advice

Advice	Comment	ID
Pay attention to what's new, but come back to fundamentals	Stay on top of emerging technologies and constantly assess what's coming out. Always come back to the fundamentals of ethics and theory and best practices in curriculum and adjust as technology evolves.	Academic Manager, University, TRVJPIA
Collaborate	Find ways to collaborate, share resources, integrated degrees; attend industry specific conferences.	Academic Manager, Polytechnic, VJPA
Look for external sources of revenue	You have to be willing to go outside your institution to make this happen. Personally, I was able to raise almost two million dollars for new gear for one of my more expensive to operate labs.	Academic Manager, Polytechnic, TRVFJPNGIA
Don't jump in too fast, get out of the classroom with faculty	Put yourself out there with your faculty to learn about how the industry is changing. Go to the trade shows with them! And when you see a battle between such things as HD versus Blu-Ray, wait until one caves before you buy anything!	Academic Manager, College, VFA)
Stay engaged with your industry	Stay in the business you are teaching in. Attend local meet-ups. Engage with students past graduation. Follow industry evolving trends through social media.	Faculty, College, N
Keep reinforcing fundamental skills	It is important to understand that while technology is changing—basic skills such as writing and storytelling remain important.	Faculty, University, TRVJ
Listen to students	Spend more time finding out what the students want and need. Teachers who care listen to that the most in the end.	Faculty, University, TRVJP
Keep an eye on the future	You need to always be looking ahead. Yes, you need to instruct what is current, but you should always have an eye and be pushing your students towards what is next. In fact, the student is often a conduit to that "next" thing, and they should be pushed and fostered.	Operations Manager, University, TRVJNIA

Findings from the employer questionnaire. When asked what advice participants would provide to educators on the subject of keeping pace with rapid change, the most frequent suggestions were partnerships with industry, industry tours, guest speakers, and PD in the form

of attending conferences and upgrading skills. Respondents also suggested focussing on fundamentals and thinking strategically about investment in new technology. Selected comments are listed in Table 47.

Table 47. Employer questionnaire comments: general advice

Advice	Comments	ID
Connect with industry	Divide your time between the school and the business worlds. Talk to leaders. Partner with organizations.	BTRWM
Partner with industry, solve real world problems	Leave the academy and go to industry conferences. Look for opportunities to partner with industry (look at the SIRT centre as a great example) and solve real-world problems. Continue to be a creator, even if it's only for "academic" purposes.	BWM
Focus on fundamentals	As the technology advances, the fundamentals stay the same. Focusing on giving students a solid understanding of the fundamentals will give students the ability to grow into new technologies.	P
Provide critical thinking and research skills to adapt to ongoing change	No one can predict the future, so the best you can do is provide skills that will be useful no matter what happens to the technology. Those will likely be critical thinking skills and research skills.	ER
Connect with industry to understand use of current tech; use less expensive learning software where possible	Frequently tour media companies and talk to people working in the field to see what technology is being used or adapted. Ask them how you might be able to adapt what the school currently has to a new or expanded, updated use. Think strategically about new purchases, for example can some learning be accomplished with a software learning program rather than an expensive brand new studio camera that may be obsolete in two years?	BTRWMN

Findings from the educator interviews. As with the educator questionnaire, interview respondents were also asked to provide advice for their colleagues in meeting the challenge of rapid change in technologies and techniques. The themes emerging from their comments (Table 48) were mostly the same as those discovered in the questionnaire comments:

- Stick to the basics (fundamentals of storytelling and production techniques)

- Get out of the classroom for PD
- Look to external sources of revenue
- Collaborate with other institutions and industry
- Avoid jumping in too fast where new and potentially untried technology is concerned

The following additional themes were also discovered in the interview participants' comments:

- Be subject matter pursuers
- Spend money and time: travel with faculty
- Research
- Collaborate within your institution
- Don't lock yourself in

Table 48. Educator interview comments: general advice

Advice	Comment	ID
Go step by step; slow down, check with industry Do program reviews more often, hold focus groups	I think it's really a matter of doing things step-by-step. I think the thinking was correct at that time, that (the mobile) testing lab made sense. But I think learning from that to just slow down in making decisions about things, and double-checking with industry—those connections faculty have with industry—and really thinking, "Is this really a necessary skill? What's the bare bones necessary stuff for them to have out there?" And what can we say, "OK, the industry can teach them how to do that." So, I think always asking the industry at advisory committee meetings. Maybe even for some of those programs that are changing so fast we do program reviews even more often—that's sort of an arbitrary five-year deadline—maybe we do them more often, or maybe just really even doing focus groups with employers and people in the industry to say, "Here's what we're teaching right now" and getting more feedback on curriculum more frequently.	Dean, College, TRVFJPNGIA
Don't go all in on new	There was a bunch of people that wanted to take a big leap (into 3D) and there was a bunch of us that were sceptical,	Operations Manager,

technology that is untested	and there was a bunch of people in the middle, and so we do have a lot of dialogue and conversations, and we knew enough that we needed to go in to it, but we needed to know that we weren't going to go all in. So we didn't purchase the whole fleet of 3D cameras, and we didn't change all of our monitors to 3D and buy a bunch of goggles and stuff, but we did have facilities that students and faculty could work in that, and I think that's just experience having enough people around the table with knowledge and trust to be able to talk about those things.	University, TRVFJPNGIA
Be careful where you put your attention Involve faculty Build your argument	I think as leaders where you put your attention will let people know what you value. And if we value staying current, then we have to create those opportunities to get information and get faculty involved in how do we stay current. The obvious part of that too is being able to then lobby; chairs need to lobby the dean, who needs lobby the VPA to say, "Here's what we need." And then that way, if we have the accurate up-to-date information and we do the right planning process so that we're not buying things that we don't need or things that would be redundant, then the faculty can see they were involved in the decision-making, we got information from the industry, and then we're able to go forward as leaders and say, "Here's what we've seen in the industry," and have a factual based argument to take to the higher ups to get money.	Dean, College, TRVFJPNGIA
Use three-pronged approach: funding, revenue generation, and industry partnerships	In my time here, we've done two funding projects within our (school). It's not something you can go to the well every year or a couple times a year, it tends to be bigger projects that you're doing. So, we're certainly doing it right now with our post-production facility. We have looked at that three-pronged approach. Funding is certainly a part of it, revenue generation is part of it, and then partnerships with industry is the other component.	Dean, College, TVFI
Partner internally with others purchasing technology	We have the library at digital media experience and it's basically a library for technology and we would partner with them to identify high ticket items such as organic 3D printers for instance. Something in the $10,000 or $20,000 range. And then by partnering up, we're saving on funding but we're also able to get into a quicker rotation.	Faculty, University, TRVFJPNGIA
Collaborate across the institution to	Every year you're sort of fighting it out as to what you absolutely have to have to run programs. And we've even done it as a group—we have four deans on campus—we've done it where we've got together and said, "Look, this is	Dean, College, TVFI

determine demand Determine best timing for major purchases	the money that's available this year. It doesn't make sense to spread it across four deans. This year, this is where the biggest need is, and all that money is going to that one dean and that program because that's what we need to do as an institution."	
Sell up with data on revenue generation, student numbers or other value to be realised	For us now, if I can show how I can generate some revenue to help offset some of the cost, if I can show that this is a partnership that we'll be able to develop with industry that will bring some other value to the college; if I can show how student members will be impacted by this technology that I want to introduce, that's how I'm selling it.	Dean, College, TVFI

Summary

This chapter has presented findings from three data collection instruments developed by the researcher to investigate the challenge rapid change in media technologies poses for post-secondary institutions with media production programs in keeping pace in terms of capital investment and curriculum development. Findings were presented from a questionnaire conducted with 96 educators, a questionnaire conducted with 25 employers, and follow-up interviews with 20 educators, with responses grouped under the thematic headings of current environment, key challenges, possible approaches to dealing with rapid change, and general advice. This summary will use the same headings, synthesising findings from all three data collection instruments under each heading.

Current Environment

Keeping pace with both capital and curriculum is a challenge. Results from both the educator and employer questionnaires show that most respondents agree that keeping pace with rapid change in technology is a challenge, in terms of capital investment and curriculum development for educators, and capital investment and recruitment and training for employers.

Interview respondents suggested that uncertainty about adoption of new technologies, concerns about costs, bureaucratic oversight for approvals, and demands on faculty time are likely some of the underlying factors driving the questionnaire results.

Among educators, Academic Managers reported the highest level of concern regarding this challenge, as did those identifying as teaching or supporting programs in Gaming and Animation. Interview respondents suggested that Academic Managers' concerns arise from being closer to the front lines than senior managers and tasked with balancing curriculum needs and budget realities. Gaming and Animation were described as areas where the scope and pace of change is particularly rapid, requiring frequent and regular financial investment and revision of curriculum.

Results suggest that Polytechnics are particularly concerned with keeping pace with technology, while Universities are the most concerned with keeping pace with production technique. Differences between the roles of Universities versus Polytechnics and Colleges were seen to be the most likely reason for this dichotomy.

Most educators also agree that declining funding from government is an issue when it comes to keeping pace, with Universities reporting the highest agreement with this statement. While respondents described a number of approaches to obtaining alternate sources of revenue, the majority reported that their combined strategies were not sufficient to maintain currency in the face of rapid change.

The challenge of keeping pace. While most educators reported confidence that students were graduating with the knowledge and skills needed to be successful in today's media industries, employers appeared to be less certain. Educators saw foundational skills, adaptability and innovation as the most valuable elements of a student's education. While employers reported

similar needs around soft skills, critical thinking, and cultural literacy, they also expressed concern over students learning legacy media and not being trained on the latest software. Interview respondents suggested the differing opinions might arise from such factors as lack of clarity around the roles of differing institutions and unrealistic expectations on behalf of employers. The maturity of students upon graduating, depending on length of program, and the value of combining a university education with that of a college or polytechnic were also discussed.

While many academic institutions and employers reported having an ERS, educators and employers differed in their assessment of the value of their schedule. While educators mostly felt that their ERS was sufficient to keep pace with rapid change, most employers did not. Interview respondents suggested that the different perspectives might be attributed to the different goals and fiscal realities of industry versus the post-secondary sector, noting that industry feels the pressure from clients to be cutting edge, but must balance that with the realities of revenue versus investment.

In both the educator and employer questionnaires, some respondents reported having made an investment in a technology that became obsolete before its retirement or having made an investment in a technology to support a curricular strategy that did not prove successful. While some questionnaire and interview respondents offered advice on avoiding similar circumstances, others suggested that risk-taking is a necessary part of the process, and that a loss is sometimes an unavoidable learning experience. Suggestions for avoiding these circumstances included doing research, limiting initial purchases, delaying purchase to ensure uptake, renting as opposed to buying, and ensuring alignment with curriculum.

Almost all educators reported having advisory boards made up of representatives from industry, vendors, and developers, with industry representatives occupying the largest percentage of representatives. Students and alumni were also noted as sitting on some boards. The pros and cons of having vendors on advisory boards were discussed both in questionnaire and interview responses. Some respondents felt vendors provided valuable insights on industry trends, while others worried that vendors might influence buying decisions or create an image of favouritism.

When asked about approaches to training staff and faculty on new technologies, educators and employers alike chose vendor support and in-house workshops as their primary methods. Asked what other methods might be used, educators cited self-learning, online tutorials, and attendance at seminars, workshops, and conferences as common approaches. Both groups expressed confidence in the effectiveness of their training techniques, with university respondents expressing the least confidence.

Key Challenges to Keeping Pace with Rapid Change

The static nature of the post-secondary environment. Educators reported a wide range of time frames for sourcing, approving, and purchasing new equipment, depending on the price point of the purchase and the institution's budgeting and capital planning process. Most educators did not see approval processes for new equipment purchases as a major barrier, although College respondents reported a higher level of concern than those at Polytechnics or Universities.

Educators expressed greater concern around approval processes for curriculum revisions and program development. Internal and governmental oversight processes were seen as interfering with educators' ability to maintain currency, with University respondents expressing the greatest degree of concern.

Educators and employers mostly agreed that research supports teaching and learning, citing examples of research projects that helped to fund new equipment purchases or contributed to curriculum development. However, some educators voiced concern that research in the media sector is not always supported or recognised as valuable if, for example, the product is a media production as opposed to an academic paper.

Tenure was not seen by most educators as a concern in relation to keeping pace with rapid change, and employers were almost evenly split on the topic. Those who did express concern were mostly University respondents and those identifying as Academic Managers. Keeping pace and remaining current was largely seen as depending on the individual, and several participants responded that keeping up to date is something that is in any faculty members' best interests. Some educators noted that tenure provides the opportunity to explore new approaches without concern over failure.

Possible approaches to dealing with rapid change. Educators were almost evenly split on the question of following Europe's model of three-year degrees in Canada. College and Polytechnic respondents mostly supported the idea, while University respondents mostly opposed it. Employers mostly supported the idea but noted that it generally takes longer for an individual to be fully ready to enter industry. Interview respondents added that much depends on a student's individual need, and they cautioned that employers may not appreciate that the role of Universities differs from that of Colleges and Polytechnics.

Interview respondents were asked to comment on whether or not they believed their institution was an LO, and if becoming an LO might be valuable in dealing with rapid change. Several respondents commented that they believed their organisation was, or was in the process of becoming, an LO and most felt that becoming an LO would be beneficial in dealing with rapid

change. A gap was noted in the educator questionnaire response between those identifying as Administrators, and those identifying as Faculty and/or Staff, on the subject of the effectiveness of PD, with the former group expressing the greatest confidence and the latter the least confidence. The availability of funding, the type of PD offered, and the time commitment required were seen as likely factors contributing to the disconnect between Administrators and Employees on the value of PD.

Leadership was seen as an important factor in keeping pace with rapid change by most educator questionnaire respondents, with providing vision, championing budget needs, and consulting with faculty cited as important hallmarks of leadership. Some cautioned leaders against getting distracted by the latest "shiny toy." Interview respondents were asked to comment on whether they believe a transactional or a transformational approach to leadership would be more valuable in dealing with rapid change. Most respondents felt transformational leadership was key, with several commenting that both are needed, with transformational being the over-arching approach.

Educator respondents were asked to comment on whether they currently offered or planned to introduce courses on Social Media, Transmedia, Digital Literacy, and/or Computer Science in any of their programs. Both Social Media and Transmedia received a high response, with Digital Literacy showing moderate and Computer Science showing a low response. Employers were asked to rate the value of these areas of study, and they reported unanimous support for Social Media and Digital Literacy. Half of the employer respondents identified Transmedia as being valuable, but they noted that defining this field is challenging. Fewer than half chose Computer Science, but coding skills were frequently cited as being valuable.

General Advice

All three collection instruments provided the opportunity for participants to offer general advice, with the following themes emerging from all three groups:

- Stick to the basics (fundamentals of storytelling and production techniques)
- Provide skills that will be useful no matter what happens to the technology; e.g., critical thinking and research skills
- Get out of the classroom for PD
- Talk to people working in the field to see what technology is being used or adapted
- Look to external sources of revenue
- Collaborate with other institutions and industry
- Collaborate within your institution
- Be subject matter pursuers
- Spend money and time; e.g., travel with faculty
- Research latest trends in technologies and techniques
- Avoid jumping in too fast where new and potentially untried technology is concerned
- Don’t lock yourself in

This chapter has served to report the findings from three data collection instruments used to investigate the challenges post-secondary institutions with media production programs face in keeping pace with rapid change in media technologies and production techniques. Findings were reported individually from each instrument, following a similar structure of topics to that laid out in Chapters 1 and 2 of this dissertation: current environment, key challenges, possible approaches to adapting to rapid change, and general advice. The summary at the end of this

chapter has provided an overview of findings from all three instruments grouped under these topic headings.

Chapter 5: Discussion

This study has examined the challenges faced by post-secondary educators in keeping pace with rapid change in media technologies and production techniques. The intent of the study was to provide new insight in relation to the central research question: How might media educators improve leadership practice in adapting to rapid change in media industries? This chapter builds upon material covered in the literature review and the conceptual framework laid out in Chapter 2. The findings in Chapter 4, as well as additional literature related to those findings, are drawn upon in an attempt to synthesise information from these sources and provide useful deductions as to how media educators might better address the challenge of keeping pace with rapid change in media technologies and production techniques.

These topics will be examined under the same structure laid out in Chapter 3, under the headings of Current Environment, Key Challenges to Adapting to Rapid Change, Approaches to Dealing with Change, and General Advice. In this chapter, references will be made across headings to synthesise related insights and perspectives. This chapter also revisits the conceptual framework laid out in Chapter 2, outlining how findings from the study might help address the leadership challenge of adapting media programs to rapid change in media industries within post-secondary sector constraints.

Current Environment

Keeping Pace with both Capital and Curriculum is a Challenge

Perspectives shared in the literature, questionnaires, and interviews paint a consistent picture of educators and industry alike challenged to keep pace with the rapid evolution of media technologies and production techniques. Because of their different roles, educators were asked to rank the severity of the challenge in terms of capital investment in technologies and curriculum

development for new techniques, while employers were asked to rank capital investment and recruitment and training. The high scores 4 or 5 on the Likert scale were chosen by 72% of educators for capital investment, and 63% of educators for curriculum. The employer results indicate 20/25 for capital investment and 17/25 for recruitment and training.

There were discrepancies with regard to how keenly these challenges were felt by respondents from different institutions and with different roles. Respondents from Polytechnics expressed more concern over capital investment, while those at Universities expressed more concern over currency of curriculum. Academic Managers showed greater concern than their colleagues for both capital and curriculum, and ranked capital the highest between the two. In terms of subject area taught or supported, those associated with Gaming and Animation expressed the greatest concern for both, also ranking capital highest.

Comments drawn from the educator interviews and the employer questionnaire illustrate the challenge of keeping pace, from a technology and capital investment point of view, along two dimensions: updating of existing technology, and introduction of new technology that may or may not become mainstream. Differences in concern over capital or curriculum, or technology over technique, were attributed by educators in questionnaire and interview comments to the roles and objectives of the institution. The elevated concern among Polytechnics for capital investment in technology was seen to be related to a focus on hands-on training, while University respondents' concern over curriculum was attributed to a focus on theory, critical thinking, and analysis.

Comments from the educator interviews regarding Academic Managers elevated concern for keeping pace painted a picture of managers caught in the middle, who are close enough to program offerings and industry influence to understand the urgency of maintaining currency, and

who have the key accountability for selling the value of both capital investments and new directions in curriculum to senior management. The following participant excerpts illustrate this challenging position.

> I think because they hear about it more often from the faculty, they're much closer on the frontline. So, every time they're at a meeting or every time they're talking to the faculty or even at advisory committee meetings, they're hearing it from employers, what employers want. (Dean, College, TRVFJPNGIA)
>
> It's the middle management piece, you know what's available and you know what's needed. So, it's like being first AD (Assistant Director) on a set. You're the person in the middle, and you're answering for a cast and crew and yet you have the executive producer saying, "Faster, shorter", all of those things; "less takes." (Chair, College, TRVFJNGIA)

To some extent, this sense of being stuck in the middle is symptomatic of the role of the academic manager and is not limited to those trying to address the challenge of rapid change in media technologies and techniques. Lima (2016) uncovered much the same sentiment in research into challenges facing associate deans and chairs in the Ontario College system:

> This sensation of feeling stuck in the middle was a dominant theme that surfaced in most studies related to the role of the Academic Chair (Buller, 2012; Boyko, 2009; Edwards, 2006; Seagren et al., 1993; Stone & Coussons-Read, 2011; Wilson 1999). Buller (2012) states that, '…almost all department chairs find themselves trapped sooner or later between the upper administration and their faculty on an issue with intense disagreement' (p. 152).

> Perhaps Boyko (2009) sums it up most effectively, stating, ‘the most common longstanding descriptor of the chair’s job has not changed over time: it is a position between a rock and a hard place—the meat in the middle of a sandwich’ (p. 40). (p. 57)

Lima’s (2016) research examined approaches to assist associate deans and chairs to be successful in their roles in the context of change in the Ontario College system, such as the offering of degree programs, the influx of international students, increased online delivery, and reductions in provincial funding.

On the subject of the high concern cited by respondents to the educator questionnaire who teach or support Gaming, Animation, and Interactive Media, the sheer pace of change was most commonly cited by educator interview respondents. Indeed, new developments in AI, AR, VR and other immersive technologies are set to accelerate the pace of change even further, as noted by Eeden and Chow (2018):

> The pace of change isn’t going to let up anytime soon. New and emerging technologies such as artificial intelligence and augmented reality will continue to redefine the battleground.
>
> Revenues from VR apps, gaming and video, which were US$3.9bn in 2017, are expected to soar more than fivefold by 2022. In the VR space, the installed base of headsets is projected to grow substantially, helped by Facebook launching its US$199 untethered Oculus Rift in the second quarter of 2018 for gaming, education and enterprise use. The price point is significant: the Rift originally sold for US$599, and required a computer costing several hundred dollars to power the related VR experiences and games. (p. ii)

The open question to educators on what they found most challenging about keeping pace with rapid change in technologies also brought forth comments related to other respondents

explored in this study, such as the combined effect curriculum development and program length has on ensuring graduates are ready to enter the workplace. This is reflected in the university faculty member comment, “By the time, for instance, our students come in the program, we have to be teaching them technologies that we assume will be out there in the market place in four years.” These topics will be explored further later in this chapter.

Declining Funding

This topic was addressed to educators only, as there is not a comparable metric for employers, and the impact of the topic would most likely be less clear to employers in terms of the student interns and graduates with whom they work. Declining government funding for post-secondary education is a known phenomenon reflected in the literature (Bradshaw, 2013; Canadian Federation of Students, 2013; Canadian Federation of Students, 2015; Clark, 2000; Davison, 2016). With 76% of respondents choosing 4 or 5 on the Likert scale, most educators appear to agree that declining funding from government has a direct impact on their ability to keep pace with rapid change in media technologies. Although a number of respondents provided examples of alternate sources of funding used to address this challenge, 61% indicated their combined strategies were still insufficient to maintain currency. However, alternate sources of funding or alternate approaches to obtaining technology did form part of the discussions related to maintaining currency in the educator questionnaire and educator interviews and should likely be given further consideration as a means of mitigating the impact of declining funding. Research funding, partnerships, revenue generation, program specific/tech fees, grants, sponsorships, and donations were among the solutions cited by various participants.

The Challenge of Keeping Pace

To gain further insight into educators' concerns regarding keeping pace with rapid change in media technologies and production techniques, the data collection instruments developed for this study investigated educators' and employers' perspectives on the readiness of students to enter the workplace, the extent to which equipment replacement schedules (ERSs) were used and were considered valuable, the risks associated with investments in new technology, the role of advisory boards, and means by which faculty and staff become familiar with new technology.

On the subject of student readiness, employers appear to be less confident than educators that students are graduating with the skills and knowledge needed to be successful upon entering the workforce, although again the small sample size of the employer questionnaire should be considered. However, the idea that educators and employers have differing perspectives on student readiness is not a new one. A 2012 international study by the McKinsey Centre for Government, sampling 2,700 employers and 900 providers (of post-secondary education), showed that 72% of providers were confident that graduates were adequately prepared for the job market, while only 42% of employers felt the same way (Mourshed, Farrell, & Barton, 2012). Discussions around student readiness in the broader educational sector tend not to focus on technical or career specific skills, but rather on soft skills such as communication, creativity, teamwork, collaboration, and analytical thinking (Carborne & Ware, 2017; Davies, Fidler, & Gorbis, 2011; "Falling Short?", 2016; Ross, 2018). This perspective aligns with some of the feedback from the employers' questionnaire, particularly in response to the question of what skills and training students should have beyond technologies and techniques; for example, "soft skills seem to be missing from the students' skill set," "critical thinking and cultural literacy,"

and “to be adaptable, open to new ideas and learning… to work successfully in a team.” It is likely important, then, to consider these comments when reviewing curriculum in relation to current industry needs.

Comments from the questionnaires and interviews regarding student readiness also spoke to the question of program length, discussed later in this chapter, and the differing roles of colleges, polytechnics and universities, suggesting that the time required to train a student to the level required challenges the ability to graduate a student with the currency employers would like to see.

While keeping pace with technology is a challenge for both educators and employers, it seems that ERSs are helpful to those organisations that have them, even though employers were less certain that their ERSs were sufficient to maintain currency. It was noted that employers face different challenges than educators; for example, it might be more cost-effective for a company to rent a studio when needed, whereas a school would need a studio year round. Also noted was the financial impact of decisions in the private sector versus the public sector, in that industry has no guaranteed source of funding and must recover all investment cost through sales.

This topic of ERSs appears to be closely aligned with the discussion of the risks involved in adopting new technologies, and the potential for rapid obsolescence of a new technology, as seen in the employer comment, “We've adopted a rigorous product planning approach to new initiatives and evolving technologies, which has created much-needed dialogue across disciplines and departments” and in the educator comments about having a five- to seven-year replacement schedule and “making sure that our narrative, and our communications, and our asks are very well thought out, making sure that we’re finding all the efficiency that we can find, so that we’re not just looking like we’re throwing away money” (Operations Manager, University,

TRVFJPNGIA). Much of the advice shared by educators and employers appears to be in response to this particular issue in advising against moving too fast or locking in where new technologies are concerned.

Most educator respondents reported having advisory boards, heavily leaning toward industry representatives with the potential to hire students. Comments regarding the value of advisory boards weighed more on curricular advice than technology. The participation of vendors was a point of controversy, with some institutions reporting their participation and value and others insisting their participation would not be appropriate. One respondent commented: “I have not considered vendors. I like the idea” (Academic Manager, Polytechnic, VJPI). These two points suggest that advisory board memberships and roles may be a topic worthy of further exploration, with the inclusion of vendors and time spent discussing technology as possibly being of benefit in dealing with rapid change.

Participants in the educator questionnaire and interviews reported vendor support and in-house workshops as their primary approach to training, and when asked about other approaches, provided descriptions of a wide range of self-learning approaches from attending seminars to learning by doing. Employers also described a range of means by which new technology is introduced. Much of how an organisation introduces new technology and ensures its users are familiar varies according to the size of the organisation, the availability of in-house trainers, and budget limitations. Large organisations tended to have in-house training departments, while small operations ensured vendor training would be available or relied on subject matter experts within the organisation to bring others up to speed. As the size of organisation and availability of human and financial resources has a direct impact on what type of support can be provided, it

appears there is not likely to be a key learning in terms of the best approach to dealing with rapid change in this topic area.

Key Challenges to Adapting to Rapid Change

The purpose of this topic area in the study was to identify barriers to change inherent to post-secondary institutions, and to determine to what extent those barriers inhibit educators' ability to keep pace with rapid change in media technologies and techniques. Approval processes for capital spending and curriculum development, teaching/research tensions, and tenure were reviewed as potential barriers.

The Static Nature of the Post-secondary Environment

Chapter 2 discussed the bureaucratic nature of post-secondary institutions in the context of universities' evolution from early days to the present. Tsichritzis (1999) commented on the lack of agility and conservative approach of universities, particularly in relation to maintaining currency in curriculum. This aligns with educator comments about curriculum review processes that could have been in place for 10 years by the time the first student meeting those learning outcomes graduates. While this is a bigger topic than can be addressed by individual media production educators, some suggested workarounds that would avoid specifics in course outlines and learning outcomes:

> I'm not committed that deeply to anything on my course documentation, et cetera. Because I just write it in such a way that, if I discover the greatest, you know, HandBrake has a compression tool and it's better than the one that I've been using—oh, my God, like let's go. And Bob's your uncle, we're using it, right? (Faculty, College, J).

Other respondents cautioned that workarounds may exacerbate the problem: "I think it's a broken system, I think it's a system that risks being further broken by people working around

the system in order to keep it nimble, whereas there still needs to be process of academic integrity and reviews" (Dean, University, TRVFJPNIA).

Research/Teaching Tensions

Like the overall approval process for content delivery, the tensions around time spent teaching versus conducting research in universities are rooted in history (Wernick, 2006). At the time of this writing, the Bologna reforms, aimed at improving attention to quality assurance in teaching and learning, have been in place for almost 20 years. According to Reichert (2010), the challenge is more one of attitude than policy. This may suggest that leadership, to be discussed later in this chapter, is a key factor in determining to what extent the balance between research and teaching can be managed and aligned with the overall goal of maintaining currency in media production studies.

Different perspectives on whether or not research supports teaching and learning in media studies found in the questionnaires and the educator interviews likely reflect the role of research in university faculty duties versus those found in colleges or polytechnics. While university faculty have direct accountability for conducting research as part of their employment, college and polytechnic faculty generally have no direct accountability, but may seek approval to conduct research and apply for funds to offset teaching costs.

For the most part, both educators and employers felt that research supported teaching and learning in media studies, regardless of institution and role. Common reasons for seeing value in research included experiential learning for students directly involved in research projects and securing funds for technology. University respondents also saw value in the opportunity to explore new approaches without concern for failure. Employers saw benefits in research breaking new ground in technologies and techniques, and in developing critical thinking skills

among students. Colleges and Polytechnics saw benefits in developing partnerships and entrepreneurship. This would seem to suggest that although the subject of teaching/research tensions will no doubt continue, particularly where discussion of quality teaching and learning in universities is concerned, research may be a strong avenue to explore in terms of keeping pace with media technologies and techniques.

The Impact of Tenure

As noted in Chapter 2, the subject of tenure is controversial in terms of its value in contemporary post-secondary education (Horn, 1999; Wernick, 2006). As noted in the literature, tenure is rooted in the early history of post-secondary education and was meant to ensure that academics were supported in the pursuit of knowledge. Contemporary views tend to hold that tenure is necessary to ensure academic freedom and attract top candidates for faculty positions, but as Horn (1999) noted, even supporters of tenure have expressed concern that the practice of tenure provides “continued employment to the mediocre” (p. 275). Horn noted that a common “attack” on tenure is the challenge it can present when responding to rapid change (p. 272).

While several educator respondents did warn of the potential for faculty to become complacent, most felt this to be an individual rather than systemic issue and that most faculty are self-motivated to remain current. Some felt that the intended purpose of tenure was a benefit in terms of keeping pace with new technologies and techniques, as it provides faculty with the opportunity to explore new areas without fear of reprisal if the outcome is not what was anticipated or hoped for.

Respondents to the employer questionnaire were almost evenly split on the value of tenure. Those who considered it a concern mostly expressed the risk of complacency as their rationale, while those who supported tenure agreed there was a need for academics to have the

freedom to explore new territory. It would appear then that tenure is not a topic worthy of serious investigation in terms of dealing with the challenge of rapid change.

Possible Approaches to Dealing with Rapid Change

Recognising that rapid change in media technologies and production techniques challenges post-secondary educators in media programs in terms of keeping pace, this study has examined what factors contribute to those challenges and what barriers to change might inhibit overcoming those challenges. While the static nature of the post-secondary environment may be difficult to address beyond "tricking the system" as described by one interview respondent, research and tenure may more facilitate keeping pace with rapid change than be a barrier to it, based on data gathered in this study.

Other approaches to dealing with rapid change investigated in Chapter 2 include the possibility of adopting a three-year degree system similar to the approach taken in Europe, "loosening up" the university structure in terms of flexibility and collaboration in program delivery, developing a learning organisation (LO) culture, applying transformational leadership skills, and teaching digital literacy. The topics of three-year degrees, LOs, and the role of leadership were addressed directly in the data collection instruments. While the subject of loosening up the university was not explored in depth in the data collection instruments, this topic and teaching digital literacy prompted questions about offerings of courses in social media, transmedia, digital literacy, and computer science.

Three-Year Degrees

As noted in the findings, College and Polytechnic respondents were generally in favour of offering three-year degrees, while University respondents were not. Of the employer respondents, most were in favour of three-year degrees as a means of getting students into the

work force as quickly as possible. As Chair of a college media school, the researcher is in a position to provide the perspective that many colleges and polytechnics currently offer three-year advanced diplomas, and there has been discussion in the Ontario college system of having some of these programs recognised as degrees.

The subject is a complex one, touching as it does on the amount of time required to become fully conversant in a discipline, the amount of time required to build critical thinking skills, the maturity of students, the objective of the student in terms of the career being sought, and the point in a student's studies at which foundational skills are taught. All of this is reflected in the diverse comments provided by respondents in the three data collection instruments. The major themes arising from these comments can be summarised as follows:

- For discipline-specific training, a three-year degree could be sufficient
- To develop strong analytical and critical thinking skills, more time is needed
- There is risk in teaching foundational skills in the first years of a four-year program if technologies and techniques will have advanced by a student's graduation
- There is a sense that colleges and polytechnics teach people to be technicians or craftspeople, and universities teach people to be storytellers, entrepreneurs, and leaders, and that the latter takes longer
- The ideal education is seen by many as being a combination of a university and college/polytechnic education, and it is apparent that this is becoming somewhat common

It would seem from these varying perspectives that there is no consensus on the value of three-year degrees, but the structure of curriculum in terms of ensuring that familiarity with

technologies and techniques is current as close to graduation as possible is a subject worthy of further discussion.

Learning Organisation

The value of becoming an LO was explored in two ways in the educator questionnaire and the educator interviews. In the former, the data were collected regarding use of common LO professional development (PD) techniques and their effectiveness, such as student feedback surveys, performance reviews, reflective practice, peer coaching, and funding for course and conference attendance. In the latter, respondents were provided with a scholarly definition of an LO, and were asked to comment on whether or not they considered their organisation to be an LO, and whether or not they thought becoming an LO would be beneficial in terms of keeping pace with rapid change in media technologies and production techniques.

Educator questionnaire respondents cited student feedback surveys, performance reviews, and funding for course and conference attendance as the most common forms of PD. A disconnect was noted between administrators and faculty and staff as to the effectiveness of PD, with 67% of administrators choosing 4 or 5 on the Likert scale, and only 43% of faculty and staff choosing the same. Responses from the educator questionnaire and educator interviews touched on many aspects of the findings in this area. Lack of funding was cited as a disincentive when more valuable PD activities are not funded. Individual motivation was cited as a factor, as it was in the discussion of tenure. Some equated PD with mandated institutional training that was not always seen as valuable or necessary. Another factor discussed was the time commitment involved, and the extent to which faculty are realistically able to incorporate learnings into curriculum.

At the same time, some respondents reported positive results from industry specific experiences, and recommended processes such as PD course tracking, follow up surveys, and an obligation to present learnings to colleagues.

The broader questions around becoming an LO resulted in a positive response from most interview respondents, although responses varied as to whether or not respondents felt their organisation was presently an LO or in the process of becoming one. As one participant commented, “You have to be learning in order to deal with change.” This suggests that a broader conversation may be worth having, which integrates LO culture and the value of PD.

Leadership

As with the topic of becoming an LO, the subject of leadership was explored in both the educator questionnaire and the educator interviews. In the questionnaire, participants were asked a simple, open-ended question about the role of leadership in maintaining currency in technology and curriculum. Those interviewed were provided with scholarly descriptions of transactional and transformational leadership and were asked to comment on the role of leadership in dealing with rapid change as well as which of the two approaches described might be most effective.

Respondents saw leaders’ roles as providing vision, supporting faculty initiatives aimed at delivering on that vision, providing resources, and prioritising in alignment with the strategic goals of the institution. For the most part, respondents favoured transformational leadership, but several saw a role for transactional leadership serving the goals of an overall transformative approach. This aligns with the research cited in Chapter 2 that suggests that while both forms of leadership have value depending on individual situations, transformational leadership is preferable as the overall approach to managing in an environment of rapid change (Bass, 2000; Bass & Riggio, 2006; Burke, 2010; Smith & Bell, 2011).

Teaching Social Media, Transmedia, Digital Literacy, and Computer Science

The rise of social media since the mid-2000s has factored into the rapid evolution of media technologies and techniques in several ways. Social media is both a competitor and a tool for broadcasters. As advertisers shift revenue to online and mobile services, broadcasters increasingly use social media as a means for promotion, engagement with audiences, and transmedia storytelling (Benedict, 2013; Eeden & Chow, 2018; Gürel & Tiğli, 2014; Zanni, 2017). Social media has also given rise to "citizen journalists", who post current events as they happen. This has led to a much faster news cycle, while at the same time providing new tools for journalists (Azimi, 2016; Zeller & Hermida, 2015). Social media has grown to such dominance over such a short period of time that Bühler and Bick (2018) argue that "researchers cannot keep pace with the rapid changes this topic engenders" (p. 1). These factors drove questions in both the questionnaires and the educator interviews regarding the presence of social media in curriculum, along with the questions about transmedia, digital literacy, and computer science emerging from Chapter 2.

Social media and transmedia were both noted as being taught or introduced by most participants in the educator questionnaire, while digital literacy was identified by a slim majority of 59% and computer science by only 23%. Employers were asked to consider the importance of social media and transmedia in their business strategy, and the importance of digital literacy and computer science in an employee's skill set. In contrast, those employers who took part ranked social media and digital literacy the highest (25 out of 25), while less than half noted transmedia and computer science as being important. Computer science was noted by some educators as valuable for preparing students in an IT-based media industry. Computer science was also noted

in the comments from employers as being important for some roles but not all, while basic coding such as HTML was noted as being valuable for all employees.

In the educator interviews, respondents were asked to comment on the low response for computer science as being important. Responses from respondents suggested that computer science as a discipline was not always a fit with creative disciplines, but respondents did acknowledge that coding is important. Comments were also made about the potential for collaboration across schools and faculties as a means of managing the integration of computer science elements with media production programs.

These findings align with those in Chapter 2 with regard to Gross and Do's (2009), Riismandel's (2008), Tsichritzis' (1999) and Zyda's (2006) comments and recommendations around the importance of some IT studies in media production programs and customising curriculum to integrate elements across faculties to prepare students for industry. Likewise, Ng's (2012) recommendations to teach digital literacy over technology specific skills resonates with employers' strong desire to see this skill set in employees. This would suggest that both digital literacy and computer science are worth a closer look in terms of preparing students for an environment of rapid change in media technologies.

General Advice

The request for general advice included in both questionnaires and the educator interviews provided an opportunity to capture a range of other topics not necessarily factored into the research instruments, as well as further comments that aligned with both the literature and findings from the questionnaire and interview questions. There was considerable alignment between educators and employers on the following points:

- Stick to the basics (fundamentals of storytelling and production techniques)

- Provide skills that will be useful no matter what happens to the technology; i.e., critical thinking and research skills
- Get out of the classroom for PD
- Talk to people working in the field to see what technology is being used or adopted
- Collaborate with industry
- Research new production technologies and techniques
- Avoid jumping in too fast where new and potentially untried technology is concerned
- Don't lock yourself in

These key points of agreement suggest that both educators and employers recognise the challenge of keeping pace with rapid change in media technology and production techniques, and while many findings from the data collection instruments are likely to prove insightful for educators, both groups see curriculum focussed on fundamentals and adaptability as a critical base for success when entering the job market. Both also recommended caution and strategic thinking when investing in new technologies, either through minimal purchase and testing, or purchase of entry level technology or virtual tools before making a major commitment. PD and maintaining strong relationships were also seen as key by both groups.

Addressing the Leadership Challenge

Data drawn from the findings speaks to the tensions found in the intersections of the three spheres of influence described in the conceptual framework and illustrated in Figure 1. Media industries and media programs share challenges in keeping pace with the rapid evolution of media technologies and techniques, but this evolution also forces media educators to adapt to that change to ensure they are graduating students who will be well-prepared to enter those industries. At the intersection of media programs and the post-secondary sector, media educators

must work within the environment of declining funds and lengthy review and approval processes, while ensuring that tenure and research work to advance the pursuit of adaptation to the demands of rapidly evolving media industries. Finally, the demands of rapidly evolving media industries challenge the post-secondary system as a whole, where a lack of nimbleness threatens the ability of media programs to develop and launch curriculum in a manner that ensures graduates are not meeting learning outcomes established up to a decade previously.

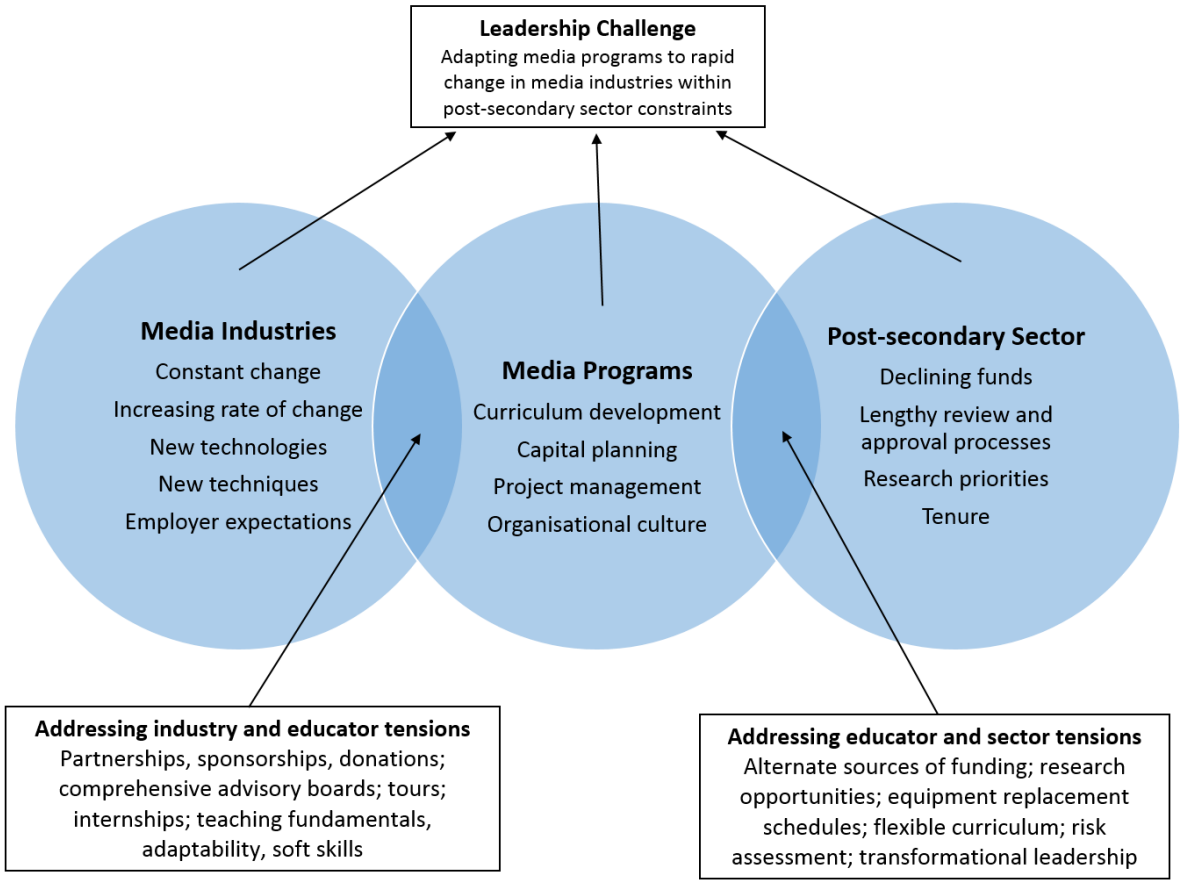


***Figure 34*. Addressing the Leadership Challenge**

Figure 34 illustrates how findings from the study might aid media educators in addressing the leadership challenge. At the intersection of media industries and media programs, educators might look to employers to aid in meeting their expectations around graduate preparedness:

- Form partnerships with industries for sharing of resources and experiential learning opportunities
- Seek sponsorships and donations from industries
- Tour industry facilities to learn of new developments
- Invite diverse industry participation in advisory boards, including vendors

In response to industry recommendations, educators might focus more on fundamental rather than technology specific skills, as well as soft skills such as adaptability, critical thinking, and cultural literacy.

At the intersection of media programs and the post-secondary sector, educators might respond to declining funds by seeking alternate sources of funding such as donations, sponsorships, and research grants. By embracing research opportunities, educators may also address capital needs as well as adapting to rapid change through forward-looking projects and experiential learning opportunities for students. Equipment replacement schedules may strengthen educators' abilities to ensure resourcing is well managed. Flexibility in curriculum design may improve educators' abilities to incrementally ensure adaptation to ongoing change. Risk assessment may aid in avoiding ill-fated purchases or help to ensure the risk is worth taking, regardless of the potential for loss. A transformational leadership style may help develop a culture of adaptability and nimbleness required to meet the challenge of rapid change.

Beyond the context of media production programs in post-secondary institutions, this study contributes to educational research in the post-secondary sector that has sought to determine what leadership styles and practices might best facilitate quality in teaching (Bryman, 2007; Burke, 2010; d'Ambrosio & Ehrenberg, 2007; Harris & Spillane, 2008; McCaffrey, 2010; McRoy & Gibbs, 2009; Smith, 1996; Smith & Bell, 2011; Spillane, 2005). In particular,

respondents' comments on the role transactional leadership as supporting transformational leadership align with Bass' (2000) comment that "Leadership can also be transactional. The good leader of the learning organization will be both, but more transformational" (p. 21).

This study also contributes to research that suggests becoming an LO may facilitate improvement in teaching (Pedler et al., 1989; Scott & Dixon, 2009; Van Note Chism et al., 2002), with many respondents acknowledging the employment and value of such PD staples as reflective practice, peer coaching, and a coordinated approach to student feedback. While Scott and Dixon (2009) found a reluctance among faculty to buy into PD initiatives such as student feedback, educational researchers may find it interesting to learn that for some media educators this dissatisfaction extends beyond academic PD to subject matter PD. Comments from faculty and staff indicated that insufficient funding, limited time for involvement, and lack of opportunity to apply learning were the main causes of disillusionment where subject matter PD was concerned.

Summary

In keeping with the structure utilised in the findings and discussion chapters of this study, the topics explored in this chapter will be summarised under the headings of current environment, key challenges to adapting to rapid change, approaches to change, and general advice, allowing for cross-reference between topic areas in keeping with the analysis conducted.

Current Environment

As noted, there is strong indication that educators and industry alike feel challenged by rapid change in media technologies and production techniques. That concern is expressed in terms of both capital investment for upgrading, replacement, and new purchase of technology, as well as training and curriculum revision for technique. Educators' and employers' sense of

urgency and recommended focus on fundamentals and adaptability align with Eeden and Chow's (2018) comment that "The pace of change isn't going to let up anytime soon. New and emerging technologies such as artificial intelligence and augmented reality will continue to redefine the battleground." These findings support the researcher's assumptions in Chapter 1:

- The rapid pace of innovation in media technology, and resulting impact on storytelling technique, will not only continue but will most likely continue to increase in coming years.
- While improvements in media technology result in more affordable equipment yielding better results, leaders of media programs will continue to be challenged by the diversity of new media technologies and the associated costs of running courses in multiple media disciplines.

The finding that Academic Managers feel these challenges most acutely would not appear to be a phenomenon specifically arising from dealing with change in media technologies and techniques, but rather from the nature of the role as being "stuck in the middle" between the interests of faculty and upper administration, as seen in Lima's (2016) study.

While declining government funding was seen by most participants as having a direct impact on an institution's ability to keep pace, it is not a challenge that educators themselves have an opportunity to address. The researcher's assumption that government funding of post-secondary education will continue to decrease or at most, plateau in the future aligns with available documentation of funding trends (Bradshaw, 2013; Canadian Federation of Students, 2013; Canadian Federation of Students - Ontario, 2015; Fisher, Rubenson, Jones, & Shanahan, 2009). "In the 1960s and '70s, governments covered more than 90 per cent of post-secondary costs. By 2013, that figure had decreased to 57 per cent" (Davison, 2016, para. 24). Participants

listed alternate sources of funding and alternate means of obtaining technology, but many reported these combined strategies were still insufficient to maintain currency. However, those strategies are likely worth further study as a means of mitigating the impact of declining funding.

The topic of student readiness to enter the workforce aligns with the challenge of keeping pace with both technologies and techniques, and while concern over familiarity with the latest technologies and techniques was expressed by some employers, soft skills such as adaptability, collaboration, and analytical thought were seen to be as or more important. These findings are borne out in broader research into student readiness for the job market across industries. The teaching of social media, transmedia, digital literacy, and computer science also forms part of the discussion around student readiness. In those topic areas, social media is seen to be universally important, with aspects of the other three seen as important to varying degrees depending on the duties of the employee.

A number of educators and employers shared stories about investing in technologies that did not work out. Related topics and advice provided suggested that several strategies may be helpful in mitigating the risk of failed investments, including using ERSs, conducting thorough research, seeking input from advisory boards, limiting initial investments, and applying patience. Some also suggested that a certain amount of risk and failure is to be expected and necessary if one hopes to remain current, and that aligning new technology investments with research funding can be an effective way of mitigating costs and providing a safe environment for failure.

No major themes emerged regarding the introduction of new technologies and the training required for staff and faculty. The size of the organisation and the resources available were the major determinants of the approach taken.

Key Challenges to Adapting to Rapid Change

The fourth researcher assumption expressed in Chapter 1 was that traditional barriers to change in the educational sector are likely to remain well into the future, and leaders of media programs will be in need of effective strategies for managing change within current environments. Questions in both questionnaires and the educator interviews sought to determine what barriers might be of particular concern in meeting the challenge of rapid change in media technologies and techniques. Topics covered included the bureaucracy of post-secondary systems with regard to approval of technology investment and curriculum changes, the impact of teaching/research tensions, and the role of tenure. Like that of declining funding, these are not topics educators can address directly. Research in Chapter 1 demonstrates the pace at which change happens in the sector, and while current events suggest tenure may disappear from all but a few institutions in the future, this could take the better part of the current century (Flaherty, 2017; Gittleman, 2015). However, synthesised findings from the other topics in the study suggest that leadership may have a role in helping to navigate nimbleness within the rigid framework of the system, as might embracing an LO culture.

While frustrations about bureaucratic processes that delay approval of capital and curriculum were expressed by many in the study, the topic of research/teaching tensions was not seen as a systemic challenge to keeping pace with rapid change in media technologies and techniques. Both were seen to depend more upon individual motivation and the degree to which individuals focussed on current or forward-looking subject matter, such as research investigation of the use of new technologies or new approaches to production techniques.

Possible Approaches to Dealing with Rapid Change

On the subject of three-year degrees, the overall finding would seem to be that much depends on the student's intent in terms of career path, and that program length and curriculum approval processes contribute to the problem of student readiness. Combining university and college studies was seen to have value both in terms of student maturity and the mix of technical skills with critical thought.

Being or becoming a learning organisation was seen to be a valuable approach to dealing with rapid change; however, the value of PD, a pillar of LO, received a mixed response between Administrators and Faculty and Staff. The disconnect between Administrators and Faculty and Staff over the value of PD appeared to be tied to several factors including the availability of funding, individual motivation, the time commitment involved, and the nature of the PD activity.

As with other topics discussed under possible approaches to change, the role of leadership may be significant in building an LO culture, given participants' comments on the importance of leadership in setting vision. Transformational leadership was seen to be the favoured approach among all educator participants when compared to transactional, but transactional leadership was also seen as an important part of leadership in achieving the overall goals of meeting the challenge of rapid change.

The investigation into the offering, or planned offering, of courses and modules on social media, transmedia, digital literacy, and computer science provided insight into the perspective of educators and the expectations of employers. While both groups appear to be aligned regarding the importance of social media, there are some differences worth noting regarding the other subjects. Comments from both groups suggest that some of the differences might be explained by differing interpretations of the subject in question. While some related their comments to the

definitions provided in the questionnaire, others appeared to view the subject differently. Transmedia was interpreted by some as simply multi-platform delivery, digital literacy as familiarity with computers and social media applications, and computer science as IT studies. The researcher acknowledges there may have been insufficient clarity on these points in the design of the data collection instruments, and that this must be considered in analysing these results. Regardless of these potential variants, familiarity with coding emerged as important from participants' comments, and the overall ability to understand digital technologies and adapt emerged from comments in various topic areas throughout the study.

General Advice

As noted, the general advice section of the study provides further insight into several topic areas, and the recommendations provided will be brought forward into the next chapter's summary and recommendations.

Chapter 6: Summary and Recommendations

The purpose of this study was to explore the challenges post-secondary institutions offering media production programs face in keeping pace with the rapid evolution of media technologies and production techniques—both in terms of capital investment and curriculum development—and to provide insight into the possible means of addressing those challenges. The main conclusion drawn from this study is that educators at these institutions face very real challenges on both fronts in keeping pace with rapid change, and are actively seeking to manage these challenges within the limitations of restricted financial resources and less than nimble administrative processes.

This chapter will provide a summary of conclusions drawn from the study, recommendations for educators, recommendations for further research, limitations and delimitations of the study, and reflections of the researcher. Conclusions drawn from this study will be summarised under five thematic areas: understanding the nature of the challenge; the academic context; strategic planning; the organisational cultural context; and ensuring student success.

Conclusions

Understanding the Nature of the Challenge

That educators find keeping pace with rapid change in media technologies and production techniques in terms of capital investment and curriculum development challenging appears to be well-established by responses to the educator questionnaire and further reinforced by educators' interview comments. The relatively small sample of employer questionnaire respondents indicate that industry is similarly challenged from the perspectives of capital investment, recruitment, and training. Employers' concerns over recruitment and training are significant for educators, as

employers look to hire students who are qualified as well as able to adapt to rapid change. Educators feel constrained by limited funding, particularly declining funding from government, and by curriculum approval processes that can result in a seven- to 10-year gap between the establishment of learning outcomes and the graduation of students ready to apply those outcomes, depending on program length. For a four-year program, technology taught at the outset of the program may not be in industry at the point of graduation.

Academic Context

Accredited academic post-secondary institutions in Canada operate under systems rooted in the traditions of the early universities to varying degrees, depending on the role of the institution and the policies of provincial governments. Rigorous approval processes are in place for curriculum development and review and are meant to ensure academic integrity. Tenure and research are also hallmarks of the university model, and while not specifically entrenched in the mandate of colleges and polytechnics, academic freedom is protected through collective agreements in those institutions, and research is increasingly seen as an important activity for both.

The topics of curriculum review, tenure, and research were explored in this study as potential barriers to keeping pace with media technologies and production techniques. Based on the data, the researcher concludes that approval processes for curriculum review are indeed seen as a barrier to meeting the challenge of rapid change, making a nimble response to industry trends difficult. Although tenure is clearly a controversial topic in terms of its value in the contemporary academy, the conclusion derived from the study is that tenure is not generally seen as a barrier to keeping pace with rapid change, as it is more a matter of personal motivation and inspiration at the leadership level. Research, examined from the point of view of its potential to

detract from teaching and learning, is likewise concluded to be seen as mostly supporting rather than competing with teaching and learning in media technology and production, particularly where experiential learning opportunities exist. Evidence suggests that tenure and research may actually have more impact as facilitators of keeping pace with rapid change rather than barriers, given the opportunities to introduce new technology and explore production techniques outside curriculum and without fear of failure.

The investigation into the possible benefit of introducing three-year degrees also falls into the category of academic context, and on this topic, there is a clear split between Universities and Colleges/Polytechnics, with the former opposed and the latter in favour. No clear conclusion can be drawn from these results, although the broader conversation around the topic suggests that much depends on an individual student's career aspirations and the expectations of employers. The parties generally agree that colleges' and polytechnics' strength lies in teaching skills and craft, while universities' strength lies in developing critical thinking and analysis.

Strategic Planning

A high number of participants reported having invested in technology that either became obsolete before its planned retirement date or was purchased to support a curricular strategy that did not succeed. The researcher has concluded that this is a realistic risk for post-secondary educators attempting to keep pace with new and evolving technology with limited financial resources. Although no single strategy emerged for avoiding these pitfalls in every case, the research did show numerous perspectives on managing the challenge that should be useful for those weighing decisions on technological investment.

Although participants were asked to what extent advisory committees were useful in terms of keeping pace with technologies and production techniques, the conclusion drawn is that

most educators see the role of advisory boards as helping to guide decisions on curriculum rather than technology. The subject of including vendors on advisory boards was controversial. Some respondents were opposed to having vendors on their boards for fear that these stakeholders would have undue influence on purchasing decisions. While acknowledging these concerns, those participants who reported having vendors on their boards commented on the value these stakeholders brought in terms of understanding the latest technological trends. The researcher has observed that vendors are also at times employers of media students.

In-house workshops and vendor support were the two most common approaches to ensuring that faculty and staff are trained on new technology and are able to incorporate it into curriculum.

Cultural Context

The relationship between organisational culture and keeping pace with rapid change in media technologies and production techniques was explored through questions about professional development (PD) in the educator questionnaire and about learning organisations (LOs) in the interviews, as well as questions about the role of leadership in both, and leadership styles in the interviews.

One can conclude from participants' responses that an LO approach is seen as a good fit with keeping pace with media technology and production techniques, particularly with its focus on constant learning and adapting to change, as well as engaging in learning with students. On the other hand, few respondents felt that their institution could currently be described as an LO. A potential disconnect was noted between administrators and employees over the value of PD, which may be a barrier that administrators will need to address in the process of building an LO culture.

One can also conclude that leadership is seen to have a key role in meeting the challenge of rapid change in media technologies and production techniques, and that it is tasked with the following accountabilities:

- Listening to faculty
- Providing vision
- Engaging consultants
- Facilitating response to rapid change
- Avoiding the lure of the "shiny new toy/object"

Ensuring Student Success

While educators are generally confident that they are graduating students with the skills necessary to enter the work force, the small sample of employers felt less confident. Employers cited soft skills, production fundamentals, and familiarity with current technology as the three areas they felt were not being covered adequately in media programs. Out of social media, transmedia, digital literacy, and computer science, social media and digital literacy were seen by employers as the primary topics to teach, while social media and transmedia were listed by educators. The overall conclusion arising from this data is that while currency in technologies and techniques is important, fundamental skills and adaptability win out over learning the specifics of operating one system over another.

Recommendations for Educators

Participants in this study generously provided advice and recommendations arising from their own experiences, both good and bad, in attempting to deal with the challenge of keeping pace with media technologies and production techniques. In addition, a synthesis of the findings revealed other considerations that may be helpful for educators tasked with this challenge.

Recommendations offered in this section will be grouped under the general headings of strategies to manage costs, strategies to ensure success, and strategies to improve academic operations.

Strategies to Manage Costs

Managing costs is at the core of dealing with rapid change in media technologies from a capital investment perspective, given the setback an unsuccessful investment may cause if there are not the resources to take corrective action in a timely manner. Educators use a variety of techniques to mitigate the impact of rapid change and tight budgets, some of which may be unfamiliar to others and worth consideration.

Cost recovery strategies:

- Tech fees: charging students additional fees for access to certain resources or facilities
- Program specific fees: additional program fees beyond tuition, based on the need to maintain a certain level of technological infrastructure for the program
- Portfolio submission fees
- International tuitions
- Software-as-a-service (Cloud services)
- Long-term rental of technology and facilities over purchase
- Revenue generating activities, such as facility renting or production services.

Partner support strategies:

- Partnerships, both internal and external, to share costs and access to resources
- Collaborating across schools and faculties for major purchases
- Technology grants for replacing or upgrading facilities

- Funded research that covers purchase of new technology for investigation before major investment
- Student union donations
- Alumni donations

Cost reduction strategies:

- Bring your own device (BYOD) programs
- Downloading costs to students through program entry requirement purchases (e.g., DSLR camera)
- Approach vendors for trade-ins on equipment that does not work out

While it should be noted that 61% of educator questionnaire respondents said their combined strategies were insufficient to meet the challenge of rapid change, these strategies do have the potential to provide more latitude for managing purchasing processes.

Strategies to Ensure Success

Beyond maximising funding through alternate means, participants shared planning strategies deemed helpful in maximising the value of investments in new technology.

Planning strategies:

- Consider developing an equipment replacement schedule (ERS). ERSs are only found in a handful of institutions at present, and those that have them felt they were sufficient to maintain currency
- While it is always possible that funding will not be available when needed, a timeline helps ensure requests will be staged year to year
- Consider "what if?" Can the equipment be repurposed if the planned deployment does not prove successful (e.g., 3D gear repurposed for 2D production)?

- Consider adopting Agile and MVP product planning processes to help manage the process on a continuum as opposed to case-by-case. Consider training managers in these tools and techniques.
- Insist that curricular applications are planned prior to acquisition, at least broadly.
- Look for a faculty "champion" to investigate and adopt technologies and techniques into curriculum.
- Consider having vendors on advisory boards.
- Use online tutorials, engage local champions, and support attendance at conferences and workshops for faculty and staff tasked with learning and teaching new technology.

Risk management strategies:

- Do not be a leader where new technology is concerned.
- Try not to be at the forefront, go slow (e.g., invest enough in 3D to do some basic production, but don't fully convert).
- Consult broadly with faculty, industry, and colleagues at other institutions.
- Rely on advisory committees.
- Consider whether or not you have the resources (e.g., on-site technician) to support the new technology.
- Ensure new technology can be used across multiple programs.
- Rent rather than buy in the initial stages to see if a technology "takes."
- Leverage the opportunities that research and tenure provide to quickly adopt and test new technologies and techniques before investing the budget and time for outfitting and embedding in curriculum on a large scale.

- Wait a year to assess before investing in new technology.

Strategies to Improve Academic Operations

The investigation into potential barriers to change that are embedded within post-secondary institutional culture also resulted in recommendations arising from participants' comments with regard to ensuring curriculum development, program delivery, and administrative processes are aligned with the goal of keeping pace with rapid change in media technologies and production techniques:

Curricular strategies:

- Consider the value of digital literacy and computer science in curriculum, especially in relation to industry feedback. Digital literacy is an obvious gap, and while both educators and employers rated computer science low, coding was cited in commentary as important, and computer science as important for certain areas. Consider teaching or partnering with computer science faculty.
- Focus on fundamentals.
- Consider alternative deliveries (three-year degrees, collaborative degrees, articulations, partnerships) where appropriate; consider reorganising structures that teach practical skills first, in order to have practical skills taught closer to graduation and employment.
- Concentrate more on teaching soft skills, basics, adaptability, critical thinking, cultural literacy, openness to new ideas and learning, and working successfully in a team.

Consulting strategies:

- Explore partnerships with industry, industry tours, guest speakers, and PD as means of ensuring exposure to the latest technologies and techniques.
- Engage in frank discussions with employers about the "gaps" they experience with new student hires.

Leadership strategies:

- Recognise that animation and gaming are key pain points for rapid evolution, at least currently, and factor into broad-based planning.
- Push for better recognition for media research projects.
- Investigate the value of PD from all stakeholders' perspectives: What are the reasons for the apparent disconnection between employers and employees? Managers should engage in frank dialogue with faculty and staff about the value of PD, and how best to manage PD opportunities and participation. Consider PD course tracking, follow up surveys, and mandatory presentations.
- Leadership is a key factor in addressing any issues around bureaucracy, research, and tenure where direct change is unachievable at the local level. Leaders should strive to provide transformative leadership, supported by transactional leadership.
- When recruiting faculty, focus more on lateral thinking, investigative and leadership skills, and team orientation, rather than star power or industry track record.

Recommendations for Further Research

The findings from this study may prove useful for those wishing to explore the phenomenon in greater depth by investigating the perspectives of students and their extended families or those who support them financially and otherwise. While in less of a position to

speak to employer and market needs and issues of academic and fiscal planning within institutions, these stakeholders may provide useful insight into expectations around currency as they relate to the choice of institution and course of study being considered.

On a larger scale, the data provided in this study provides an opportunity to develop and test a project planning tool or assessment rubric to aid in decision-making when considering whether or not to invest in a new technology or undertake curriculum revision in response to emerging technologies and production techniques. Such a study would likely require several years to complete to provide data on whether or not the tool or rubric was useful in making more effective decisions, although simulation may be a valid means of testing against various scenarios.

On the subject of research, these findings may open an avenue of investigation into the support and funding of non-traditional research activities, such as commercial production of new forms of storytelling. Such an investigation may also provide insight in the value of tenure, as freedom to explore new technologies and techniques forms part of the same discussion. These findings may also prove valuable for those investigating three-year degrees or alternate forms of program delivery in general, contributing as they do to the discussions around institutional role, student career goals, and employer expectations.

In the broader context of educational research, these findings may prove valuable to educators studying leadership in the post-secondary context beyond the media education setting. Post-secondary leaders in general will no doubt find the disconnect between administrators, and the faculty and staff that report to them, regarding the value of PD, which may warrant further investigation across schools and faculties to determine if this phenomenon is widespread or unique to its sector. Similarly, views on the value of tenure and research explored in this study

may differ from those found in other schools and faculties, and inspire further research into the role of each in the broader post-secondary context. The findings from the sector specific focus on improving leadership practice in adapting to rapid change in media industries may also prove useful across sectors, particularly where best practices in addressing this challenge are concerned.

Limitations and Delimitations

There are certain limitations within media industries and media educational programs that may have resulted in inaccurate or skewed data from the research process. The variability of media programs is one such factor. Schools with large media programs including film, television, radio, transmedia, and digital media, for example, may face more difficulty in prioritising investment than smaller schools that focus on a single area, such as web design.

Media schools tend to be competitive, and pride themselves on such metrics as graduate success, currency in the field, and the possession of cutting-edge technology. This characteristic posed another potential limitation, in that there might have been resistance to open examination of the success or failure of curriculum and capital planning to date, and this could have limited the extent to which specific details could be provided in the findings. The willingness of employers to participate was also impossible to predict, and potentially limited the scope of the study's ability to validate findings among a large sample group.

The deficit in scholarly research into this area to date was a further limitation, making comparative analysis difficult, and calling for the creation of unique instruments for quantitative data measurements.

A core delimitation imposed by the researcher was to focus solely on Canada. Initially, this research project was envisioned as international, as the issue of curriculum development and

capital investment in media schools is certainly not limited to one country. The focus on Canada was intended to narrow the study to a manageable sample area, as considerable time and effort would be required to collect and analyse data on program offerings, job markets, and responsiveness of all educational institutions on a global scale. While limiting the potential benefit to schools in other markets, this narrower focus allowed for a study of unique facets of the Canadian system that will improve relevance for Canadian media schools. Canada occupies a unique space in the international market given its proximity to the much larger US market and the vast variance in media job opportunities by market. The impact of these variables can be more clearly examined by narrowing the focus to the Canadian market.

Within the Canadian market, another delimitation of this study was to narrow the sample to those institutions with curriculum that includes a hands-on production component. At some institutions with a focus on media and communications theory and analysis, students may not participate in actual media production, and the issues around teaching technique and technology use may be of less concern. As this study is primarily concerned with these issues, it was important to identify a baseline of program mix and technical infrastructure for inclusion.

A further delimitation is worth noting for those who may seek specific advice regarding equipment evaluation. Administrators of media production programs regularly search for research that is technology specific, in hopes of determining the “best” technology for a particular purpose within a school environment. Prices of cameras, for example, vary greatly; and often inexpensive cameras are acceptable for teaching if the necessary user controls are available. This study does not provide any direct recommendations concerning technology, as the purpose of the study was to improve the decision-making process itself.

Reflections of the Researcher

This study was originally inspired by my observations of the challenges post-secondary institutions were facing in the early 2000s as the broadcast industry in Canada began its transition from SD to HD video. I remember seeing a colour HD system consisting of a camera and monitor demonstrated at a Hudson Bay store in the late 1970s as an example of the future of television. That future took some 25 years to arrive, and while video production evolved over those years, most of it consisted of simply a "better" version of what came before. New technology could be introduced as part of the regular replacement schedule of an organisation without much fear over incompatibility or inability to integrate new and old technology.

Converting a facility to HD technology was prohibitively expensive, and an HD conversion would mean every piece of hardware and software related to video production—cameras, switchers, routers, graphic generators, edit systems—would need to be replaced or upgraded. The result was a debate among many educators as to when they would convert to HD, if ever, and how it would be rolled out. At the time, I was teaching at Ryerson University, where the decision was made in 2005 to upgrade Studio A to HD and decommission Studio B, leaving it available as a sound stage for multiple forms of production. At the time, multi-camera was experiencing a bit of a resurgence, resulting in the need to use both studios for multi-camera classes and, in the case of Studio B, needing to build and tear down a portable multi-camera system for every class. The cost of keeping pace with new technology had led to difficult decisions that directly impacted program delivery.

Over the course of the next five years, the pace of change increased rapidly. Apple repositioned its popular Final Cut Pro editing software from a broadcast to prosumer market, causing many institutions to undertake a very sudden and costly change to Adobe Premiere. A

colleague of mine, who arrived at Ryerson in 2007, commented that the first iPhone launched that year, and that by the time the first-year students of that year were graduating, they were writing apps for it. This was also the year that the first RED digital cinema camera came on the market. The debut of the film *Avatar* in 2009 rekindled interest in 3D production and led to an explosion of 3D video production tools, including many affordable dual-lens camera systems. The latter became obsolete very quickly, as interest waned in low-end 3D production, and the industry trended to using post-production tools to create 3D from 2D image capture. By the close of the decade, 4K video was achieving significant adoption, and educators were once again tasked with the "when if ever?" question. These advances in video technology also brought with them widespread compatibility issues in video file formats and image processing.

A parallel process of evolution in storytelling techniques took place over the course of the 2000s in the wake of evolution of media technologies. Under the banner of Web 2.0, websites became more dynamic, interactive spaces giving rise to user-generated content, virtual communities, and social media. New content delivery forms such as webisodes, fictional sites, and online games allowed storytellers to expand the narrative beyond a single platform, an approach labelled transmedia storytelling. Further developments in mobile technology have provided even more opportunity for content creation and distribution, including now familiar examples such as the inexpensive VR 360 and 3D viewing solution Google Cardboard, and the 2016 AR mobile game Pokémon Go.

I enrolled in the EdD program at the University of Calgary in 2012 with the proposal of studying the challenge media educators face in keeping pace with rapid change in media technologies and production techniques. It is perhaps ironic that a study into dealing with rapid change should take so long to complete. Indeed, the ever-escalating pace of change in the media

production sector has made it difficult to complete this project without frequently revisiting earlier sections of the document.

I passed the oral candidacy exam in 2014 but relocated to a new city and a new position in early 2015, causing me to slow down slightly while attending to these new realities. However, the most significant matter contributing to the delay was the need to obtain ethics review approval from 26 institutions across the country in addition to my thesis host institution before being able to approach potential participants at those institutions. It was my experience that the ethics review processes at colleges and polytechnics were more onerous and time consuming than those at universities. I did not experience a significant delay or request for revision from any of the universities I approached, as those institutions used a delegated review process given that the study had already received ethics approval from my host institution. In many cases colleges and polytechnics requested significant changes, some beyond the scope of ethical consideration. It is my opinion that this is reflective of the shorter history colleges have with scholarly research, and the lack of mechanisms designed for review of proposals already approved by other accredited bodies.

On personal reflection, this has been a difficult and lengthy process, although rewarding in the exchange of information with colleagues across the country. I maintain that creating original instruments to gather data for this study was necessary given its unique focus and the lack of existing research that may have provided useful tools. That said, I acknowledge that creating one's own instruments is a perilous task, given the human potential for variation in interpretation of questions and comments. While the questionnaire was tested by, and feedback was received from, a subgroup of respondents on two occasions, it is nonetheless evident to me

that in two instances the definitions provided at the outset and the wording of the questions led to some confusion that should be considered in assessing the results.

The word “transmedia” was defined in the questionnaire as “Telling a story across multiple platforms, where the story expands into additional narratives that might provide more insight into the world and characters showcased in the original property.” Regardless, some interpreted transmedia as simply distributing the same content on multiple platforms, diluting any comments made regarding the importance of teaching and applying this form of storytelling. Likewise, the term “digital literacy” was defined in the questionnaire as “a fundamental understanding of digital technology development and design, aimed at equipping the user with the necessary skills to adapt to different technologies, or embrace new technologies,” but some participants interpreted the term as meaning familiarity with digital technologies such as websites, mobile applications, and social media. Regardless, respondents’ overall support for similar skills and the adaptability to learn and apply new technologies supports the premise that digital literacy is an important skill set for students entering the media production workforce.

In conclusion, this has been a lengthy and challenging, but rewarding, project. I am deeply grateful to my colleagues in the academic and industry sectors who willingly took the time to respond to questionnaire questions and take part in interviews, and for their candid and revealing insights into the impact of rapid change on their professional activities and the ups and downs of attempting to meet the challenge of rapid change in media technologies and production techniques.

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Appendix A

Questionnaire for Educators

Thank you for your assistance with the research project Meeting the Challenge of Rapid Change in Media Industries: A Roadmap for Canadian Colleges and Universities. It is hoped that the findings of this study will add new knowledge to the field of education with regard to long term planning and timely decision-making where development of media program curriculum and support infrastructure are concerned.

Questionnaires such as this one are being distributed to Academic and Operations Managers, Faculty, and Staff at several post-secondary institutions with media production programs across Canada. Similar questionnaires will be sent to employers to gain insight into their expectations and the factors shaping change in media industries.

The questions presented in this document are in various formats, including Likert Scales with 1-5 ratings, closed questions (yes/no or limited choice), and narrative. In many cases, a narrative response is requested in addition to a rating or closed question. Narrative responses are encouraged to assist in deeper understanding and analysis of the data collected. Where a Likert Scale is used, the number 1 represents the least positive response or slightest degree of agreement, and the number 5 the most positive response or greatest degree of agreement with the question being posed.

For the purposes of this study, the following definitions apply:

Media technologies: Current and emerging hardware and software utilized in the creation of content by media industries, including but not limited to: television, radio, film, photography, print, web, music, gaming and other forms of new media.

Production techniques: Creative skills required to execute current and emerging forms of storytelling, including but not limited to narrative, documentary, journalism,

installation, performance, game development, virtual reality, augmented reality and transmedia.

Capital investment: Funds directed toward the building, maintaining and upgrading of technical infrastructure (hardware, software, and facilities) to support media programs.

Curriculum development: Creation/revision of courses and programs to ensure learning outcomes and course content remain current and keep pace with emerging industry practice and employers' needs and expectations.

Maintain currency: Keep pace with the latest industry developments, technologies and practices. For example, in recent years video production has evolved from standard definition to high definition and now 4K or Ultra High Definition; competing editing systems dominate the market at one time or another; new forms of storytelling emerge, such as transmedia, virtual reality and augmented reality.

Virtual Reality (VR): A storytelling technique whereby the audience is immersed in a digital environment that replicates the sensation of being in a real environment, typically through the use of a headset that allows the user to look and move around in the environment through a responsive 2D or 3D display.

Augmented Reality (AR): A storytelling technique whereby the audience is able to view virtual 2D or 3D objects overlaid in a real environment either through use of a mobile device with a camera or a headset with transparent lenses upon which a digital object can be projected. Similar to VR, AR tracks the object in relation to the real environment as the mobile device or headset moves. Pokémon Go is a popular example of Augmented Reality.

Social media: The use of social network applications for the creation, distribution, promotion and interaction with media properties and entities. E.g., Facebook, YouTube, Twitter, Pinterest, Instagram, Tumblr, etc.

Transmedia: Telling a story across multiple platforms, where the story expands into additional narratives that might provide more insight into the world and characters showcased in the original property, including webisodes, character blogs, games, comic books, etc. High profile examples include Star Wars, Star Trek, The Matrix and Lost.

Digital literacy: A fundamental understanding of digital technology development and design, aimed at equipping the user with the necessary skills to adapt to different technologies, or embrace new technologies. Understanding the basics of computer science and user interface design allows the user to think in terms of the similarities between devices and the tasks they are designed to perform rather than depending on rote learning of how a particular device works, e.g. Avid vs Adobe edit system.

Computer science: The study of information technology (IT) systems — the components of computers and other digital technologies, data creation and management, coding and coding languages.

1. Is your institution:

- ◯ College
- ◯ Polytechnic
- ◯ University
- ◯ Other (please specify)

2. Is your role at your institution:

- ◯ Dean
- ◯ Academic Manager (Chair, Associate Dean)
- ◯ Operations Manager
- ◯ Faculty
- ◯ Staff
- ◯ Other (please specify)

3. Which area of media production do you teach or support? (Administrators, select all that are offered in your school or faculty.)

- ☐ Television
- ☐ Radio
- ☐ Video
- ☐ Film
- ☐ Journalism
- ☐ Photography
- ☐ Animation
- ☐ Gaming
- ☐ Interactive Media (Web, Mobile, AR, VR and other interactive technologies)
- ☐ Audio (Recording, Mixing, Editing for Music, Film, Video, Game)
- ☐ Other (please specify)

4. Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of capital investment?

1	2	3	4	5
◯	◯	◯	◯	◯

5. Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of curriculum development?

1	2	3	4	5
◯	◯	◯	◯	◯

6. In your opinion, which is more challenging - maintaining currency with technology or with production techniques?

- ◯ Technology
- ◯ Technique

7. In your opinion, are post-secondary media production students graduating with the knowledge and skills they need to be successful in today's media industries, i.e. sufficient familiarity with current technologies and techniques, as well as the ability to adapt in a rapidly evolving field?

1	2	3	4	5
◯	◯	◯	◯	◯

Please explain

8. Does your program/school/faculty have an equipment replacement schedule?

- ◯ Yes
- ◯ No
- ◯ Don't know

9. Do you believe your equipment replacement schedule is sufficient to remain current with industry standards?

- ◯ Yes
- ◯ No

10. Is declining funding from government an issue when it comes to maintaining currency?

- ◯ Yes
- ◯ No

How?

11. What other means of funding have been developed at your institution to maintain currency? (Example:

Partnerships, donations, grants, program specific fees, revenue generating activities)

12. Are the combined funding strategies at your institution sufficient to maintain currency?

- ◯ Yes
- ◯ No

13. Have you and/or other individuals in your school or faculty ever made an investment in a technology that became obsolete before its planned retirement date?

- ◯ Yes
- ◯ No
- ◯ Don't know

If yes, how was the issue dealt with? What would you do differently to avoid a similar circumstance?

14. Have you and/or other individuals in your school or faculty ever invested in a technology to support a curricular strategy that did not prove successful?

- ◯ Yes
- ◯ No
- ◯ Don't know

If yes, how was the issue dealt with? What would you do differently to avoid a similar circumstance?

15. Please indicate, to the best of your knowledge, if your program, or any program in your school or faculty, currently has or plans to introduce a course or module in any of the following subject areas?

- ☐ Social media
- ☐ Transmedia
- ☐ Digital literacy
- ☐ Computer science

16. Please comment where possible on why your program/school/faculty, currently has or plans to introduce a course or module in any of the following subject areas, or why you would consider such a course to be or not be valuable?

Social media	
Transmedia	
Digital literacy	
Computer science	

17. Does your program/school/faculty have advisory boards or similar groups that provides guidance on curriculum development and currency with industry?

- ◯ Yes
- ◯ No

18. Do your advisory boards or groups include members of media industries as well as product vendors and/or developers?

- ☐ Industry
- ☐ Vendors
- ☐ Developers

Why or why not?

19. What is the process in your program/school/faculty for integrating new technologies and techniques into the workplace?

- ☐ Vendor support
- ☐ Consultants
- ☐ In-house workshops
- ☐ Other (please specify)

20. How successful has this strategy been? Please provide examples.

1	2	3	4	5
○	○	○	○	○

Please provide an example or examples.

21. In your opinion, do research interests support or compete with media production teaching and learning?

○ Support

○ Compete

Please explain

22. In your opinion, is tenure a concern with regard to maintaining currency with technologies and techniques?

○ Yes

○ No

Please explain

23. European universities have moved toward three-year undergraduate degrees for many programs. Would you favour a three-year model for media production undergraduate degree programs in Canada?

○ Yes

○ No

Why or why not?

24. What is the timeframe for sourcing, approval and purchase of new equipment at your institution?

- ◯ Less than 3 months
- ◯ 3 - 6 months
- ◯ 6 months - 1 year
- ◯ More than a year
- ◯ Other (please specify)

25. Has the approval process for purchase of new equipment interfered with your program/school/faculty's ability to maintain currency with media technology?

1	2	3	4	5
◯	◯	◯	◯	◯

26. Has the approval process for curriculum revision and program development interfered with your program/school/faculty's ability to maintain currency in course offerings and content?

2	2	3	4	5
◯	◯	◯	◯	◯

27. What role do you see leadership playing in maintaining currency in technology and curriculum?

28. Does your institution employ any of the following professional development (PD) activities?

- [ ] Student feedback surveys
- [ ] Performance reviews
- [ ] Reflective practice
- [ ] Peer coaching
- [ ] Funding for course and conference attendance
- [ ] Other (please specify)

29. To what extent are the PD activities described effective in helping faculty and staff remain current?

1	2	3	4	5
○	○	○	○	○

Which should be done more or less?

30. What advice would you offer to fellow educators seeking to meet the challenge of rapid change in media industries with regard to maintaining currency with technology and production techniques?

31. If you have any additional comments for the researcher concerning this survey or the research project, please provide them here.

Appendix B

Questionnaire for Employers

Thank you for your assistance with the research project Meeting the Challenge of Rapid Change in Media Industries: A Roadmap for Canadian Colleges and Universities. It is hoped that the findings of this study will add new knowledge to the field of education with regard to long term planning and timely decision-making where development of media program curriculum and support infrastructure are concerned.

This questionnaire is being sent to media industry employers across Canada. Questionnaires are also being sent to Deans, Chairs, Faculty and Staff at several post-secondary institutions with media production programs across Canada to gain a broader perspective into the factors shaping change in media industries, and the expectations of various stakeholders.

The questions presented in this document are in various formats, including Likert Scales with 1-5 ratings, closed questions (yes/no or limited choice), and narrative. In many cases, a narrative response is requested in addition to a rating or closed question. Narrative responses are encouraged to assist in deeper understanding and analysis of the data collected. Where a Likert Scale is used, the number 1 represents the least positive response or slightest degree of agreement, and the number 5 the most positive response or greatest degree of agreement with the question being posed.

To some extent, post-secondary institutions with media production programs face the same challenges as industry when it comes to maintaining currency and utilizing resources wisely. For this reason, several questions with regard to best practices are included in this questionnaire, as the educational sector can learn from industry when it comes to meeting these challenges.

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Computer science: The study of information technology (IT) systems – the components of computers and other digital technologies, data creation and management, coding and coding languages.

Which of the following terms best describe the media sector in which you work?

- [ ] Broadcast
- [ ] Corporate
- [ ] Industrial
- [ ] Educational
- [ ] Television
- [ ] Radio
- [ ] Web
- [ ] Mobile
- [ ] Interactive
- [ ] Film
- [ ] Photography
- [ ] Music
- [ ] Other (please specify)

Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your organization in terms of capital investment?

1	2	3	4	5
○	○	○	○	○

Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your organization in terms of recruitment and training?

1	2	3	4	5
○	○	○	○	○

In your opinion, which creates the greater challenge —maintaining currency with new technology through capital investment, or recruitment and training of employees ready to work with these technologies and/or adapt quickly to new technologies and forms of media?

- ○ Capital investment
- ○ Recruitment and training

Why?

Does your organization have an equipment replacement schedule?

- ◯ Yes
- ◯ No
- ◯ Don't Know

Do you believe your organization's equipment replacement schedule is sufficient to remain current with industry standards?

- ◯ Yes
- ◯ No

Has your organization ever made an investment in a technology that became obsolete before its planned retirement date?

- ◯ Yes
- ◯ No
- ◯ Don't Know

If yes, how did you deal with this issue? What would you do differently to avoid a similar circumstance?

Please indicate if either or both of the following are important components of your organization's business strategy.

- ☐ Social media
- ☐ Transmedia

Why or why not?

Please indicate if you see either or both of the following as important aspects of an employee's skill set.

- [ ] Digital literacy
- [ ] Computer science

Why or why not?

What is the process at your organization for integrating new technologies and techniques into operations?

- [ ] Vendor support
- [ ] Consultants
- [ ] In-house workshops
- [ ] Other
- [ ] Don't Know

Explain

How successful has this strategy been? Please provide examples.

1	2	3	4	5
○	○	○	○	○

Please provide an example or examples.

In your opinion, are post-secondary media production students graduating with the knowledge and skills they need to be successful in today's media industries, i.e. sufficient familiarity with current technologies and techniques, as well as the ability to adapt in a rapidly evolving field?

1	2	3	4	5
○	○	○	○	○

Explain

Beyond familiarity with current technologies and techniques, what particular skills and training do you feel it is important to have to be successful in today's rapidly changing media industries?

Faculty in Canadian Universities must divide their time between teaching and conducting research, and many Colleges are now engaging in research as well. In your opinion, do research interests support or compete with media production teaching and learning?

○ Support

○ Compete

Explain

Do you see the practice of tenure in post-secondary institutions as a concern with regard to maintaining currency with technologies and techniques?

○ Yes

○ No

Why or why not?

European universities have moved toward three-year undergraduate degrees for many programs. Would you favour a three- year model for media production undergraduate degree programs in Canada?

Yes

No

Why or why not?

Are there particular institutions you favour when considering interns or new hires?

Yes

No

Why or why not? What attributes might certain institutions or their graduates have that would make you favour one over another?
(Please do not name specific organizations.)

What advice do you/would you provide to students who are trying to choose an institution to attend in preparing for a career in your field?

What advice would you provide to educators who are struggling to keep pace with the latest technologies and techniques in your field?

Appendix C

Interview Questions for Deans

Re: Q4 & 5—Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of capital investment? Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of curriculum development?

1. What is it that you find most challenging about keeping pace with rapid change in media technologies?

2. When asked if keeping pace with the rapid evolution of media technologies was a challenge at their institution, 72% of respondents chose 4 or 5 on the Likert scale in terms of capital investment, while 63% chose 4 or 5 in terms of curriculum development. In both cases, Academic Managers reported the highest level of concern with 93% ranking 4 or 5 for capital investment and 80% for curriculum development. In your opinion, what might account for AMs greater concern?

3. Across all areas of study, Gaming and Animation programs cited the greatest concern for both capital investment and curriculum development. What is it about these areas that might make keeping pace more challenging?

4. Polytechnics expressed the greatest concern with regard to keeping pace through capital investment, while Universities expressed the greatest concern in terms of curriculum development. What insights can you provide with regard to this observation?

Re: Q7—In your opinion, are post-secondary media production students graduating with the knowledge and skills they need to be successful in today's media industries, i.e. sufficient familiarity with current technologies and techniques, as well as the ability to adapt in a rapidly evolving field?

5. Most respondents expressed confidence that students are graduating with the necessary skills to be successful in today's media industries, with 66% in total choosing 4&5. University respondents were the least confident with 12% choosing 1. In your opinion, what might account for the difference in perspective among institutions?

6. Employers were overall neutral on the question average a response of 3. What might account for the disconnect between educators and employers on this point?

Re: Q8 & 9—Does your program/school/faculty have an equipment replacement schedule? Do you believe your equipment replacement schedule is sufficient to remain current with industry standards?

7. To your knowledge, do any of your programs have ERSs?

a. If yes – 72% of educator respondents who confirmed having ERSs felt that the schedule was sufficient to remain current with industry standards. When asked the same question, 80% of industry respondents claimed the opposite. What might account for these different perspectives? What might these findings suggest about the challenge of keeping pace with rapid change in media schools?
b. If no - How do you manage fiscal planning without a replacement schedule?

Re: Q13 & 14—Have you and/or other individuals in your school or faculty ever made an investment in a technology that became obsolete before its planned retirement date? Have you and/or other individuals in your school or faculty ever invested in a technology to support a curricular strategy that did not prove successful?

8. A significant number of respondents reported making an investment in a technology that became obsolete before its planned retirement date, or to support a curricular strategy that did not prove successful. Has that ever happened at your institution, and if so what factors contributed to the situation, and what did you learn as a result that might be valuable to your colleagues?

Re: Q 17 & 18—Does your program/school/faculty have advisory boards or similar groups that provides guidance on curriculum development and currency with industry. Do your advisory boards or groups include members of media industries as well as product vendors and/or developers?

9. Most institutions report having advisory boards made up of industry, vendor and developer representatives. What impact has having advisory boards had on your ability to remain current, and make appropriate investments in technology?

Re: Q19—What is the process in your program/school/faculty for integrating new technologies and techniques into the workplace?

10. While most respondents cited In-house Workshops and Vendor support as their key process for integrating new technologies and techniques, 34% chose "other." Are there any other processes that you have used that you have found to be effective?

Re: Q21—In your opinion, do research interests support or compete with media production teaching and learning?

11. Most respondents felt that research interests support media production teaching and learning. Would you agree or disagree, and why or why not?

Re: Q 22—In your opinion, is tenure a concern with regard to maintaining currency with technologies and techniques?

12. 34% of respondents see tenure as a concern with regard to maintaining currency. Academic Managers expressed the greatest level of concern at 40%. To what extent do you see tenure as a concern and why or why not?

Re: Q23—European universities have moved toward three-year undergraduate degrees for many programs. Would you favour a three-year model for media production undergraduate degree programs in Canada?

13. Polytechs and Colleges were 57% and 65% respectively in favour of three-year degrees, while 88% of universities were not. Employers are largely supportive, encouraging post-secondary educators to get students out into the work place as quickly as possible. What is your perspective and why?

Re: Q26 —Has the approval process for curriculum revision and program development interfered with your program/school/faculty's ability to maintain currency in course offerings and content?

14. When questioned about the impact of the approval process for curriculum development and program, University respondents express the greatest concern, with a combined 4 and 5 at 60%. 45% of College respondents and 38% of Polytechnic respondents chose likewise. Comments?

Re: Q28 & 29—Does your institution employ any of the following professional development (PD) activities? (SFS, Performance Reviews, Reflective Practice, Peer Coaching, Courses & Conferences, Other); To what extent are the PD activities described effective in helping faculty and staff remain current?

15. When asked about the effectiveness of PD, 74% of AMs ranked 4&5 combined, while 43% of faculty ranked 4&5 combined. Is there a potential disconnect between management and faculty over the effectiveness of PD? How is this measured? How could it be improved?

16. What role do you see leadership playing in maintaining currency in technology and curriculum?

17. In a 2011 paper, Smith and Bell described two general approaches to leadership described as transactional and transformational:

    a. Transactional leadership focuses on the interaction between followers and leaders who, in turn, directly affect the behaviours of followers. Transactional leadership has two main factors: contingent reward and management-by-exception. Contingent rewards require subordinates to reach agreed levels of performance, whereas management-by-exception is used to intervene whenever standards are not met.
    b. Transformational leadership, on the other hand, has the potential to change the very culture of the organization, helping shape and develop it as environmental requirements change. Rather than measuring performance, the transformational leader inspires and motivates followers, demonstrating the importance of satisfying higher-order growth needs, fostering a desire to improve and achieve and demonstrating qualities such as optimism, excitement about goals, a belief in a future vision, a

commitment to develop and mentor followers and an intention to attend to their individual needs. (p. 59)

Which might be more effective in dealing with the challenge of rapid change? (Question about transactional vs transformative style?)

18. To meet the needs of students and industry in a rapidly changing environment, post-secondary schools may need to evolve from teaching organizations to learning organizations (LOs). Pedler, Boydell and Burgoyne (1989) define an LO as follows:

    a. An organization which facilitates the learning of all of its members and continuously transforms itself. For faculty, being part of an LO may mean a more active response to student feedback and taking part in professional development. In a way, the work of faculty development has become more in harmony with the learner-centered education being promoted for students.
    b. Some PD tools that might be used in an LO are:
        i. Reflective practice
        ii. Community of practice (e.g., teaching circles)
        iii. Peer coaching
        iv. Coordinated approach to student feedback
        v. Cycle of planning, acting, observing, and reflecting for improved performance

    Would you describe your institution as a Learning Organization? Would becoming a Learning Organization be of any benefit in dealing with the challenge of rapid change?

Appendix D

Interview Questions for Academic Managers

Re: Q4 & 5—Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of capital investment? Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of curriculum development?

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    a. If yes – 72% of educator respondents who confirmed having ERSs felt that the schedule was sufficient to remain current with industry standards. When asked the

same question, 80% of industry respondents claimed the opposite. What might account for these different perspectives? What might these findings suggest about the challenge of keeping pace with rapid change in media schools?

b. If no - How do you manage fiscal planning without a replacement schedule?

Re: Q13 & 14—Have you and/or other individuals in your school or faculty ever made an investment in a technology that became obsolete before its planned retirement date? Have you and/or other individuals in your school or faculty ever invested in a technology to support a curricular strategy that did not prove successful?

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    b. Transformational leadership, on the other hand, has the potential to change the very culture of the organization, helping shape and develop it as environmental requirements change. Rather than measuring performance, the transformational leader inspires and motivates followers, demonstrating the importance of satisfying higher-order growth needs, fostering a desire to improve and achieve and demonstrating qualities such as optimism, excitement about goals, a belief in a future vision, a commitment to develop and mentor followers and an intention to attend to their individual needs. (p. 59)

Which might be more effective in dealing with the challenge of rapid change? (Question about transactional vs transformative style?)

18. To meet the needs of students and industry in a rapidly changing environment, post-secondary schools may need to evolve from teaching organizations to learning organizations (LOs). Pedler, Boydell and Burgoyne (1989) define an LO as follows:

    a. An organization which facilitates the learning of all of its members and continuously transforms itself. For faculty, being part of an LO may mean a more active response to student feedback and taking part in professional development. In a way, the work of faculty development has become more in harmony with the learner-centered education being promoted for students.
    b. Some PD tools that might be used in an LO are:
        i. Reflective practice
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        iii. Peer coaching
        iv. Coordinated approach to student feedback
        v. Cycle of planning, acting, observing, and reflecting for improved performance

    Would you describe your institution as a Learning Organization? Would becoming a Learning Organization be of any benefit in dealing with the challenge of rapid change?

Appendix E

Interview Questions - Faculty

Re: Q4 & 5—Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of capital investment?: Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of curriculum development?

1. All survey respondents reported concern in keeping pace through both capital investment and curriculum development, although concerns over curriculum development tended to be less. What is it that you find most challenging about keeping pace with rapid change in media technologies?

2. With regard to areas of study, all respondents reported concern, with Gaming and Animation being the highest. Why might these areas be particularly concerned?

3. Polytechnics expressed the greatest concern with regard to keeping pace through capital investment, while Universities expressed the greatest concern in terms of curriculum development. What insights can you provide with regard to this observation?

Re: Q7—In your opinion, are post-secondary media production students graduating with the knowledge and skills they need to be successful in today's media industries, i.e. sufficient familiarity with current technologies and techniques, as well as the ability to adapt in a rapidly evolving field?

4. Most respondents expressed confidence that students are graduating with the necessary skills to be successful in today's media industries, with 66% in total choosing 4&5. University respondents were the least confident with 12% choosing 1. In your opinion, what might account for the difference in perspective among institutions?

5. Employers were overall neutral on the question average a response of 3. What might account for the disconnect between educators and employers on this point?

Re: Q8 & 9—Does your program/school/faculty have an equipment replacement schedule? Do you believe your equipment replacement schedule is sufficient to remain current with industry standards?

6. To your knowledge, do any of your programs have ERSs?
    a. If yes – 72% of educator respondents who confirmed having ERSs felt that the schedule was sufficient to remain current with industry standards. When asked the same question, 80% of industry respondents claimed the opposite. What might account for these different perspectives? What might these findings suggest about the challenge of keeping pace with rapid change in media schools?
    b. If no - How do you manage fiscal planning without a replacement schedule?

Re: Q13 & 14—Have you and/or other individuals in your school or faculty ever made an investment in a technology that became obsolete before its planned retirement date? Have you and/or other individuals in your school or faculty ever invested in a technology to support a curricular strategy that did not prove successful?

7. A significant number of respondents reported making an investment in a technology that became obsolete before its planned retirement date, or to support a curricular strategy that did not prove successful. Has that ever happened at your institution, and if so what factors contributed to the program, and what did you learn as a result that might be valuable to your colleagues?

Re: Q 17 & 18—Does your program/school/faculty have advisory boards or similar groups that provides guidance on curriculum development and currency with industry. Do your advisory boards or groups include members of media industries as well as product vendors and/or developers?

8. Most institutions report having advisory boards made up of industry, vendor and developer representatives. What impact has having advisory boards had on your ability to remain current, and make appropriate investments in technology?

Re: Q19—What is the process in your program/school/faculty for integrating new technologies and techniques into the workplace?

9. While most respondents cited In-house Workshops and Vendor support as their key process for integrating new technologies and techniques, 34% chose "other". Are there any other processes that you have used that you have found to be effective?

Re: Q21—In your opinion, do research interests support or compete with media production teaching and learning?

10. Most respondents felt that research interests support media production teaching and learning. Would you agree or disagree, and why or why not?

Re: Q 22—In your opinion, is tenure a concern with regard to maintaining currency with technologies and techniques?

11. 34% of respondents see tenure as a concern with regard to maintaining currency. Academic Managers expressed the greatest level of concern at 40%. To what extent do you see tenure as a concern and why or why not?

Re: Q23—European universities have moved toward three-year undergraduate degrees for many programs. Would you favour a three-year model for media production undergraduate degree programs in Canada?

12. Polytechs and Colleges were 57% and 65% respectively in favour of three-year degrees, while 88% of universities were not. Employers are largely supportive, encouraging post-

secondary educators to get students out into the work place as quickly as possible. What is your perspective and why?

Re: Q26—Has the approval process for curriculum revision and program development interfered with your program/school/faculty's ability to maintain currency in course offerings and content?

13. When questioned about the impact of the approval process for curriculum revision and program development, University respondents express the greatest concern, with a combined 4 and 5 at 60%. 45% of College respondents and 38% of Polytechnic respondents chose likewise. Comments?

Re: Q28 & 29—Does your institution employ any of the following professional development (PD) activities? (SFS, Performance Reviews, Reflective Practice, Peer Coaching, Courses & Conferences, Other); To what extent are the PD activities described effective in helping faculty and staff remain current?

14. When asked about the effectiveness of PD, 74% of AMs ranked 4&5 combined, while 43% of faculty ranked 4&5 combined. Is there a potential disconnect between management and faculty over the effectiveness of PD? How is this measured? How could it be improved?

15. What role do you see leadership playing in maintaining currency in technology and curriculum?

16. In a 2011 paper, Smith and Bell described two general approaches to leadership described as transactional and transformational:

    a. Transactional leadership focuses on the interaction between followers and leaders who, in turn, directly affect the behaviours of followers. Transactional leadership has two main factors: contingent reward and management-by-exception. Contingent rewards require subordinates to reach agreed levels of performance, whereas management-by-exception is used to intervene whenever standards are not met.
    b. Transformational leadership, on the other hand, has the potential to change the very culture of the organization, helping shape and develop it as environmental requirements change. Rather than measuring performance, the transformational leader inspires and motivates followers, demonstrating the importance of satisfying higher-order growth needs, fostering a desire to improve and achieve and demonstrating qualities such as optimism, excitement about goals, a belief in a future vision, a commitment to develop and mentor followers and an intention to attend to their individual needs. (p. 59)

    Which might be more effective in dealing with the challenge of rapid change? (Question about transactional vs transformative style)

17. To meet the needs of students and industry in a rapidly changing environment, post-secondary schools may need to evolve from teaching organizations to learning organizations (LOs). Pedler, Boydell and Burgoyne (1989) define an LO as follows:

    a. An organization which facilitates the learning of all of its members and continuously transforms itself. For faculty, being part of an LO may mean a more active response to student feedback and taking part in professional development. In a way, the work of faculty development has become more in harmony with the learner-centered education being promoted for students.
    b. Some PD tools that might be used in an LO are:
        i. Reflective practice
        ii. Community of practice (e.g., teaching circles)
        iii. Peer coaching
        iv. Coordinated approach to student feedback
        v. Cycle of planning, acting, observing, and reflecting for improved performance

    Would you describe your institution as a Learning Organization? Would becoming a Learning Organization be of any benefit in dealing with the challenge of rapid change?

Appendix F

Interview Questions - Staff

Re: Q4 & 5—Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of capital investment?: Is keeping pace with the rapid evolution of media technologies and production techniques a challenge for your institution in terms of curriculum development?

1. All survey respondents reported concern in keeping pace through both capital investment and curriculum development, although concerns over curriculum development tended to be less. What is it that you find most challenging about keeping pace with rapid change in media technologies?

2. With regard to areas of study, all respondents reported concern, with Gaming and Animation being the highest. Why might these areas be particularly concerned?

3. Polytechnics expressed the greatest concern with regard to keeping pace through capital investment, while Universities expressed the greatest concern in terms of curriculum development. What insights can you provide with regard to this observation?

Re: Q7—In your opinion, are post-secondary media production students graduating with the knowledge and skills they need to be successful in today's media industries, i.e. sufficient familiarity with current technologies and techniques, as well as the ability to adapt in a rapidly evolving field?

4. Most respondents expressed confidence that students are graduating with the necessary skills to be successful in today's media industries, with 66% in total choosing 4&5. University respondents were the least confident with 12% choosing 1. In your opinion, what might account for the difference in perspective among institutions?

5. Employers were overall neutral on the question average a response of 3. What might account for the disconnect between educators and employers on this point?

Re: Q8 & 9—Does your program/school/faculty have an equipment replacement schedule? Do you believe your equipment replacement schedule is sufficient to remain current with industry standards?

6. To your knowledge, do any of your programs have ERSs?
    a. If yes – Those with ERSs expressed a wide range of opinion as to whether or not their ERSs was sufficient to remain current. AMs 88% yes, faculty 77% yes, Deans 67% no, Staff 100% no. What might account for this disconnect in opinion? Why might Deans and staff in particular express greater concern?
    b. If no - How do you manage fiscal planning without a replacement schedule?

Re: Q13 & 14—Have you and/or other individuals in your school or faculty ever made an investment in a technology that became obsolete before its planned retirement date? Have you and/or other individuals in your school or faculty ever invested in a technology to support a curricular strategy that did not prove successful?

7. A significant number of respondents reported making an investment in a technology that became obsolete before its planned retirement date, or to support a curricular strategy that did not prove successful. Has that ever happened at your institution, and if so what factors contributed to the situation, and what did you learn as a result that might be valuable to your colleagues?

Re: Q17 & 18—Does your program/school/faculty have advisory boards or similar groups that provides guidance on curriculum development and currency with industry. Do your advisory boards or groups include members of media industries as well as product vendors and/or developers?

8. Most institutions report having advisory boards made up of industry, vendor and developer representatives. What impact has having advisory boards had on your ability to remain current, and make appropriate investments in technology?

Re: Q19—What is the process in your program/school/faculty for integrating new technologies and techniques into the workplace?

9. While most respondents cited In-house Workshops and Vendor support as their key process for integrating new technologies and techniques, 34% chose "other". Are there any other processes that you have used that you have found to be effective?

Re: Q21—In your opinion, do research interests support or compete with media production teaching and learning?

10. Most respondents felt that research interests support media production teaching and learning. Would you agree or disagree, and why or why not?

Re: Q22—In your opinion, is tenure a concern with regard to maintaining currency with technologies and techniques?

11. 34% of respondents see tenure as a concern with regard to maintaining currency. Academic Managers expressed the greatest level of concern at 40%. To what extent do you see tenure as a concern and why or why not?

Re: Q28 & 29 - Does your institution employ any of the following professional development (PD) activities? (SFS, Performance Reviews, Reflective Practice, Peer Coaching, Courses & Conferences, Other); To what extent are the PD activities described effective in helping faculty and staff remain current?

12. When asked about the effectiveness of PD, 74% of AMs ranked 4&5 combined, while 43% of faculty ranked 4&5 combined. Is there a potential disconnect between management and faculty over the effectiveness of PD? How is this measured? How could it be improved?

13. What role do you see leadership playing in maintaining currency in technology and curriculum?

14. In a 2011 paper, Smith and Bell described two general approaches to leadership described as transactional and transformational:

    a. Transactional leadership focuses on the interaction between followers and leaders who, in turn, directly affect the behaviours of followers. Transactional leadership has two main factors: contingent reward and management-by-exception. Contingent rewards require subordinates to reach agreed levels of performance, whereas management-by-exception is used to intervene whenever standards are not met.
    b. Transformational leadership, on the other hand, has the potential to change the very culture of the organization, helping shape and develop it as environmental requirements change. Rather than measuring performance, the transformational leader inspires and motivates followers, demonstrating the importance of satisfying higher-order growth needs, fostering a desire to improve and achieve and demonstrating qualities such as optimism, excitement about goals, a belief in a future vision, a commitment to develop and mentor followers and an intention to attend to their individual needs. (p. 59)

    Which might be more effective in dealing with the challenge of rapid change? (Question about transactional vs transformative style?)

15. To meet the needs of students and industry in a rapidly changing environment, post-secondary schools may need to evolve from teaching organizations to learning organizations (LOs). Pedler, Boydell and Burgoyne (1989) define an LO as follows:

    a. An organization which facilitates the learning of all of its members and continuously transforms itself. For faculty, being part of an LO may mean a more active response to student feedback and taking part in professional development. In a way, the work of faculty development has become more in harmony with the learner-centered education being promoted for students.
    b. Some PD tools that might be used in an LO are:
        i. Reflective practice
        ii. Community of practice (e.g., teaching circles)
        iii. Peer coaching
        iv. Coordinated approach to student feedback
        v. Cycle of planning, acting, observing, and reflecting for improved performance

    Would you describe your institution as a Learning Organization? Would becoming a Learning Organization be of any benefit in dealing with the challenge of rapid change?

Appendix G

Invitation to Deans and Chairs

Date:

Address:

Dear (X):

I am writing to request your assistance with a research project I am undertaking through the Werklund School of Education at the University of Calgary. The purpose of the research is to explore the challenges post-secondary institutions with media productions programs, such as yours, face in keeping pace with the rapid evolution of media production technologies and techniques. This study has been approved by the University of Calgary Conjoint Faculties Research Ethics Board.

As you no doubt have experienced, the pace of evolution in media technology has become so fast that new technologies emerge and become mainstream in a shorter time period than many 2-4 year diploma and degree programs. Many factors, from declining funds to sluggish approval processes, make the prospect of maintaining a well-outfitted and relevant facility daunting. Equally challenging is the task of ensuring faculty remain current in technologies and techniques, and curriculum is revised in a timely manner to ensure students develop the required skills to meet a workplace environment that will continue to evolve.

To explore this topic, I am undertaking research over the course of the coming months with Canadian post-secondary institutions offering media production programs, as well as employers. I am seeking participation by administration, faculty and staff in two phases of this research, the first being response to a questionnaire regarding the current environment, and the second involving interviews with a subset of the first group to delve deeper into the data collected from the first phase and look for potentially useful approaches to ensuring teaching excellence in this area in the coming years. Interviews will be audio recorded for detailed review. There is no obligation for those who participate in phase one to participate in phase two.

I am hoping that you will be willing to join me in exploring this phenomenon, and the means by which we might best address the needs of our students and employers in this rapidly changing sector.

I look forward to hearing from you.

Rob Carver
EdD Candidate, Werklund School of Education, University of Calgary
Chair, School of Contemporary Media, Fanshawe College
rcarver@ucalgary.ca, 519-619-3850

Appendix H

Invitation to Faculty and Staff

UNIVERSITY OF CALGARY

Date:

Address:

Dear (X):

I am writing to request your assistance with a research project I am undertaking through the Werklund School of Education at the University of Calgary. The purpose of the research is to explore the challenges post-secondary institutions with media productions programs, such as yours, face in keeping pace with the rapid evolution of media production technologies and techniques. This study has been approved by the University of Calgary Conjoint Faculties Research Ethics Board.

As you no doubt have experienced, the pace of evolution in media technology has become so fast that new technologies emerge and become mainstream in a shorter time period that many 2-4 year diploma and degree programs. Many factors, from declining funds to sluggish approval processes, make the prospect of maintaining a well-outfitted and relevant facility daunting. Equally challenging is the task of ensuring faculty remain current in technologies and techniques, and curriculum is revised in a timely manner to ensure students develop the required skills to meet a workplace environment that will continue to evolve.

To explore this topic, I am undertaking research over the course of the coming months with Canadian post-secondary institutions offering media production programs, as well as employers. I am seeking participation by administration, faculty and staff in two phases of this research, the first being response to a questionnaire regarding the current environment, and the second involving interviews with a subset of the first group to delve deeper into the data collected from the first phase and look for potentially useful approaches to ensuring teaching excellence in this area in the coming years. Interviews will be audio recorded for detailed review. There is no obligation for those who participate in phase one to participate in phase two.

I am hoping that you will be willing to join me in exploring this phenomenon, and the means by which we might best address the needs of our students and employers in this rapidly changing sector. The decision to participate will have no bearing on your relationship with your faculty.

I look forward to hearing from you.

Rob Carver
EdD Candidate, Werklund School of Education, University of Calgary
Chair, School of Contemporary Media, Fanshawe College
rcarver@ucalgary.ca, 519-619-3850

Appendix I

Invitation to Employers

UNIVERSITY OF CALGARY

Date:

Address:

Dear (X):

I am writing to request your assistance with a research project I am undertaking through the Werklund School of Education at the University of Calgary. The purpose of the research is to explore the challenges post-secondary institutions with media productions programs face in keeping pace with the rapid evolution of media production technologies and techniques. This study has been approved by the University of Calgary Conjoint Faculties Research Ethics Board and the Research Ethics Board of Fanshawe College.

As you no doubt have experienced, the pace of evolution in media technology has become so fast that new technologies emerge and become mainstream in a shorter time period that many 2-4 year diploma and degree programs. Many factors, from declining funds to sluggish approval processes, make the prospect of maintaining a well-outfitted and relevant facility daunting. Equally challenging is the task of ensuring faculty remain current in technologies and techniques, and curriculum is revised in a timely manner to ensure students develop the required skills to meet a workplace environment that will continue to evolve.

To explore this topic, I am undertaking research over the course of the coming months with Canadian post-secondary institutions offering media production programs, as well as employers. I am seeking participation by employers to assess the extent to which students are currently graduating with the necessary skills and knowledge to enter the workplace, and what avenues of consultation currently exist or what recommendations employers may have for educators struggling to maintain currency and ensure students graduate ready to work in a constantly changing industry. Should you agree to participate, you will be sent a brief questionnaire exploring these questions. The questionnaire should take no more than 30 minutes to complete.

I am hoping that you will be willing to join me in exploring this phenomenon, and the means by which educators might best address the needs of students and employers in this rapidly changing sector.

I look forward to hearing from you.

Rob Carver
EdD Candidate, Werklund School of Education, University of Calgary
Chair, School of Contemporary Media, Fanshawe College
rcarver@ucalgary.ca, 519-619-3850

Appendix J

Informed Consent Form for Deans, Chairs, Faculty and Staff

Research Consent Form for Deans, Chairs, Faculty and Staff

Name of Researcher, Faculty, Department, Telephone & Email:

Rob Carver, EdD Candidate, Werklund School of Education, 416-564-2883, rcarver@ucalgary.ca

Supervisor:

Ann Calvert, Werklund School of Education

Title of Project:

Meeting the challenge of rapid change in media industries: A roadmap for Canadian Colleges and Universities.

This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study

The purpose of this study is to explore the impact that rapid evolution of media technologies and production techniques is having on post-secondary institutions who offer media production programs. Educators working in this area are charged with maintaining currency in a sector where technologies and techniques may change significantly during the 2-4 year period between a student's entry to a program and graduation. Equipment upgrade and replacement is costly, and a bad purchase or design decision may have negative consequences for several years. It is hoped the findings of this study will prove valuable for media production educators in making decisions with regard to development of business plans and curriculum within the financial and administrative confines of the post-secondary education system.

What Will I Be Asked to Do?

This study will be conducted in two phases, with a limited number of participants being asked to participate in both phases.

Phase one participants will be asked to fill out a questionnaire to retrieve data concerning the extent to which they consider it a challenge for post-secondary institutions with media production programs to maintain currency in the face of rapidly evolving media production technologies and techniques. Participants will be further asked to comment on the techniques they use to cope with these issues, and to

what extent these techniques are successful. Participants will also be asked to consider a number of possible factors contributing to the challenge at their institution and report on to what extent each factor might play a role. The questionnaire is anticipated to take no more than 30 minutes to complete.

Please note that the online survey is hosted by "Survey Monkey" which is a web survey company located in the USA. All responses to the survey will be stored and accessed in the U.S.A. This company is subject to U.S. laws. If you choose to participate in the survey you understand that your responses to the questions will be stored and accessed in the U.S.A. The security and privacy policy for Survey Monkey can be viewed at Survey Monkey.com

A limited number of phase one participants will be contacted by e-mail to request participation in phase two of the study. Phase two will involve participation in interviews for the purpose of delving deeper into the data and considering means of addressing the challenge of meeting rapid change in media industries extracted from phase one. Participants in phase two may be asked to participate in an interview. Interviews will be audio recorded for detailed review. Participation by phase one respondents in phase two is completely voluntary.

Participation in this study is completely voluntary, and individuals may refuse to participate altogether, may refuse to participate in parts of the study, may decline to answer any and all questions, and may withdraw from the study at any time without penalty or loss of benefits to which s/he is otherwise entitled (for example: assistance received through Agency "X" will not be affected).

What Type of Personal Information Will Be Collected?

During the recruitment stage, contact information will be collected, including surnames and first names, telephone numbers, e-mail addresses, and the institutions or organizations participants are associated with, for the purpose of communication and addressing of documents. Classification identifiers will also be collected (e.g., college/university, urban/local, small/large, employer, faculty) for the purpose of comparing responses between these populations during data analysis. No personal identifying information will be reported in this study, and all participants shall remain anonymous.

Audio and/or video recordings of participants in phase two will only be reviewed by the researcher and research assistants who have signed confidentiality agreements. Audio and/or video recordings will never be shown in public.

Are there Risks or Benefits if I Participate?

There is little risk to participants in this study, other than inconvenience to schedule as a result of taking part in research activities. As part of the research, participants will be asked to speak candidly about successes and failures (their institutions and their own) in attempting to deal with rapid changes in media production technologies and techniques. While the researcher and research assistance are sworn to secrecy there is always some risk an example of a bad decision might be disclosed and cause embarrassment for those involved. Disclosure of all such information is completely voluntary.

As an incentive, participant's names will be entered in a draw for one of 10, $10 Tim Horton's gift cards. All winners of gift cards will be required to answer a skill-testing question, as required by the Government of Canada Justice Laws C-34 Article 74.06 of the Competition Act.

What Happens to the Information I Provide?

Only the principle investigator and research assistants will have access to the data arising out of this

study. While research respondents will be categorized in terms of role (Dean, Chair, Staff, Faculty, Employer), no personal identification will be recorded in any of the research stages.

Should any interview comments be quoted directly, no I identification will be provided in terms of individual or school, and any identifying words in the text will be deleted.

Note: in the case that a participant withdraws from a study, the TCPS advises that all data the participant contributed to the study be destroyed unless this is not feasible or there are compelling reasons not to do so. In the case of this study, there are no conditions or compelling reasons that would render destruction of participant data unfeasible, and as such all data collected from any participant who withdraws will be destroyed.

Participation is completely voluntary, anonymous and confidential. You are free to discontinue participation at any time during the study. No one except the researcher his assistant(s) and his supervisor will be allowed to see or hear any of the answers to the questionnaire or the interview recording. There are no names on the questionnaire. Only group information will be summarized for any presentation or publication of results. Data collected from the questionnaires will be stored in a secure location only accessible by the researcher and supervisor. The anonymous data will be stored for five years on a computer disk, at which time, it will be permanently erased.

Signatures

Your signature on this form indicates that 1) you understand to your satisfaction the information provided to you about your participation in this research project, and 2) you agree to participate in the research project.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation. To withdraw from this study, the participant need only send an email the research assistant requesting withdrawal from the study.

Please indicate which phase(s) of the study you are agreeing to participate in:

- ☐ Phase one only
- ☐ Both phase one and phase two

Participant's Name: (please print) _____

Participant's Signature: _____ Date: _____

Researcher's Name: (please print) _____

Researcher's Signature: _____ Date: _____

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Mr. Rob Carver,
Werklund School of Education
rcarver@ucalgary.ca, 519-619-3850
and Ms. Ann Calvert, Werklund School of Education, acalvert@ucalgary.ca, 403-220-4996

If you have any concerns about the way you've been treated as a participant, please contact the Research Ethics Analyst, Research Services Office, University of Calgary at (403) 210-9863; email cfreb@ucalgary.ca.

A copy of this consent form has been given to you to keep for your records and reference. The investigator has kept a copy of the consent form

Appendix K

Informed Consent Form for Employers

Research Consent Form for Employers

Name of Researcher, Faculty, Department, Telephone & Email:

Rob Carver, EdD Candidate, Werklund School of Education, 519-619-3850, rcarver@ucalgary.ca

Supervisor:

Ann Calvert, Werklund School of Education

Title of Project:

Meeting the challenge of rapid change in media industries: A roadmap for Canadian Colleges and Universities

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This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study

The purpose of this study is to explore the impact that rapid evolution of media technologies and production techniques is having on post-secondary institutions who offer media production programs. Educators working in this area are charged with maintaining currency in a sector where technologies and techniques may change significantly during the 2-4 year period between a student's entry to a program and graduation. Equipment upgrade and replacement is costly, and a bad purchase or design decision may have negative consequences for several years. It is hoped the findings of this study will prove valuable for media production educators in making decisions with regard to development of business plans and curriculum within the financial and administrative confines of the post-secondary education system.

What Will I Be Asked to Do?

Participants will be asked to fill out a questionnaire to retrieve data concerning the extent to which they consider it a challenge for post-secondary institutions with media production programs to maintain currency in the face of rapidly evolving media production technologies and techniques. Employers in particular will be asked to provide insight concerning the readiness of students from media production programs to enter the job market. Emphasis will be place on identifying typical strengths and weaknesses, the needs of employers, and what suggestions they may have for educators. The questionnaire is anticipated to take no more than 30 minutes to complete.

Please note that the online survey is hosted by "Survey Monkey" which is a web survey company located in the USA. All responses to the survey will be stored and accessed in the U.S.A. This company is subject to U.S. laws. If you choose to participate in the survey you understand that your responses to the questions will be stored and accessed in the U.S.A. The security and privacy policy for Survey Monkey can be viewed at Survey Monkey.com

Participation in this study is completely voluntary, and individuals may refuse to participate altogether, may refuse to participate in parts of the study, may decline to answer any and all questions, and may withdraw from the study at any time without penalty or loss of benefits to which s/he is otherwise entitled (for example: assistance received through Agency "X" will not be affected).

What Type of Personal Information Will Be Collected?

No personal identifying information will be collected in this study, and all participants shall remain anonymous.

Are there Risks or Benefits if I Participate?

There is little risk to participants in this study, other than inconvenience to schedule as a result of taking part in research activities.

As an incentive, participant's names will be entered in a draw for one of 10, $10 Tim Horton's gift cards. All winners of gift cards will be required to answer a skill-testing question, as required by the Government of Canada Justice Laws C-34 Article 74.06 of the Competition Act.

What Happens to the Information I Provide?

Only the principle investigator and research assistants will have access to the data arising out of this study. While research respondents will be categorized in terms of role (Dean, Chair, Staff, Faculty, Employer), no personal identification will be recorded in any of the research stages.

Note: in the case that a participant withdraws from a study, the TCPS advises that all data the participant contributed to the study be destroyed unless this is not feasible or there are compelling reasons not to do so. In the case of this study, there are no conditions or compelling reasons that would render destruction of participant data unfeasible, and as such all data collected from any participant who withdraws will be destroyed.

Participation is completely voluntary, anonymous and confidential. You are free to discontinue participation at any time during the study. No one except the researcher, his assistant(s) and his supervisor will be allowed to see any of the answers to the questionnaire. There are no names on the questionnaire. Only group information will be summarized for any presentation or publication of results. The questionnaires are kept in a secure location only accessible by the researcher and supervisor. The anonymous data will be stored for five years on a computer disk, at which time, it will be permanently erased.

Signatures

Your signature on this form indicates that 1) you understand to your satisfaction the information provided to you about your participation in this research project, and 2) you agree to participate in the research project.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation. To withdraw from this study, the participant need only send an email the researcher requesting withdrawal from the study.

Participant's Name: (please print) _____

Participant's Signature: _____ Date: _____

Researcher's Name: (please print) _____

Researcher's Signature: _____ Date: _____

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Mr. Rob Carver,
Werklund School of Education
rcarver@ucalgary.ca, 519-619-3850
and Ms. Ann Calvert, Werklund School of Education, acalvert@ucalgary.ca, 403-220-4996

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