

Role of LMS Assessment Tools

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To address the crisis of low retention and graduation rates at two-year colleges, public policy has focused on accountability and evidence of achievement based on outcomes. Further, online learning environments and their tools have caused a major paradigm shift in the policies, practices and learning processes of higher education. However, research on the use of technology for educational purpose and the use of the LMS tools for learning outcomes is still limited. This mixed-methods action research study (MMAR) explored the use of LMS assessment tools among faculty teaching English Composition at a community college. The aim was to increase their use for informed decision-making on student outcomes through faculty-led workshops. Based on the findings, the V-FLC was able to develop a plan for further and sustained use of the tools and make recommendations to the division for wide-scale adoption and use. This study's findings also contribute to the existing literature addressing faculty needs and the role of grass root leadership in LMS tool use to inform assessment practices.

Keywords: Introduction to English Composition (Eng 101), Learning Management Systems (LMS), Canvas Assessment Tools (CAT), Virtual Faculty Learning Committee (V-FLC)

INTRODUCTION

Although the value of a college education has become imperative in our society and the price of obtaining one has skyrocketed, retention and graduation rates, especially at two-year colleges, are only around 20 % and many students are graduating without the required skills demanded of jobs with a college degree (Gardner, 2014; Harbour, 2015; Woods, 2016). To address this crisis in higher education, public policy has focused on issues of accountability and evidence of achievement based on outcomes (Rhodes, 2012). High stakes testing and assessment are increasingly emphasized to quantify student success at the cost of true acquisition of knowledge and faculty are being pressured to increase their graduation rates. Thus innovative forms of assessment and pedagogical practices that reflect progress have come to play a central role in curriculum and course design (Lock, Kim, Koh & Wilcox, 2018).

With the emergence of new technology such as learning management systems (LMS), the affordances of assessment and feedback are realized (Costello & Crane, 2013). LMS assessment tools are special purpose tools built in the system to facilitate the assessment process (Chow, Tse, & Armatas). Students leave digital footprints in accessing instructional material online, which can be used to detect struggling students and that allows adaptive strategies that meets their needs (Barkland, 2017). LMSs with their in-built assessment tools are more in-demand since they combine efficiency of feedback and effectiveness of learner-centered assessment (Dudley, 2015). The effectiveness of a system depends on its implementation as well as design (Salisbury, 2018). The combination of a need for efficient, effective formative assessment;

the need to perform these assessments in an increasingly online environment; and the increased demand for program and course level tracking of learning outcomes (Atkinson & Lim, 2013), all provided impetus for this mixed methods action research study. Providing faculty a voice in the opportunities and challenges of a particular LMS promotes buy-in and speeds its acceptance (Walker et al., 2016). This study uses a virtual FLC (V-FLC) based on a practitioner-as-researcher model, in a mixed methods action research framework, to bring about change in faculty use of LMS assessment tools at a two-year community college (Bensimon, Polkinghorne, Bauman, & Vallejo, 2004).

Purpose of Study

The purpose of this mixed-methods action research study was to examine faculty use of Canvas assessment tools (CAT) for student outcomes in Eng 101 classes and ways to improve that use. Action research based on a practitioner-as-researcher model is a form of professional development where educators engage in a community of inquiry within a collegial environment to produce actionable knowledge (Bensimon, 2004; Pines 2008). Using a V-FLC as a collaborative unit, the aim of the research was to study the problem, work on a solution through repeated cycles of faculty-led PD, and make recommendations or suggestions for improvement. The rationale was that through a well-designed action-intervention plan based on faculty-driven professional training and support, faculty would be more inclined to use the assessment tools on Canvas for assessment purposes in a blended Eng 101 course.

Problem Statement

The problem that this study chose to investigate was related to the lack of LMS tool use, especially the assessment tools to measure course outcomes, by faculty teaching Eng 101 at a community college in New Jersey. This was a problem in the context of increased mandate from state policymakers and accreditation agencies to provide evidence of student outcome achievement as a measure of their success. To address this need, administrators have adopted the LMS platform, Canvas, and increasingly pressurized faculty to use the Canvas tools for their practice. To provide training, and support faculty in their LMS tool use, professional development workshops are also regularly provided through the Distance Education division throughout the year. Yet, these workshops or mandates have not been successful in enabling faculty to use many of the LMS tools uniformly or in a manner that could benefit their practice and prove sustainable. Especially, in Humanities-based general education courses that prepare most incoming students for key competencies, like Eng 101, use of these tools are either limited or non-existent. They are largely dependent on the confidence of the faculty to incorporate technology in their teaching and hardly used in a manner leading to student engagement or improvement on the course outcomes.

Research Questions

1. *How do faculty teaching Eng 101 courses use LMS assessment tools?*
 - a. *What LMS assessment tools do Eng 101 faculty use?*
 - b. *How frequently are LMS assessment tools used by Eng 101 faculty?*
 - c. *What factors shape use of LMS assessment tools by English 101 faculty?*
2. *What do faculty perceive as conditions needed to enhance their experience using LMS assessment tools?*
3. *What is faculty preparedness for using LMS assessment tools in blended Eng 101 classes after participating in faculty-led professional development?*
4. *What components of faculty-led professional development support the implementation and use of LMS assessment tools in Eng 101 classes?*
 - a. *How do faculty describe their experience in faculty-led professional development to support their use of LMS assessment tools in blended Eng 101 classes?*
 - b. *To what extent do faculty, who have participated in the faculty-led professional development use the LMS assessment tools in blended Eng 101 classes?*

LITERATURE REVIEW

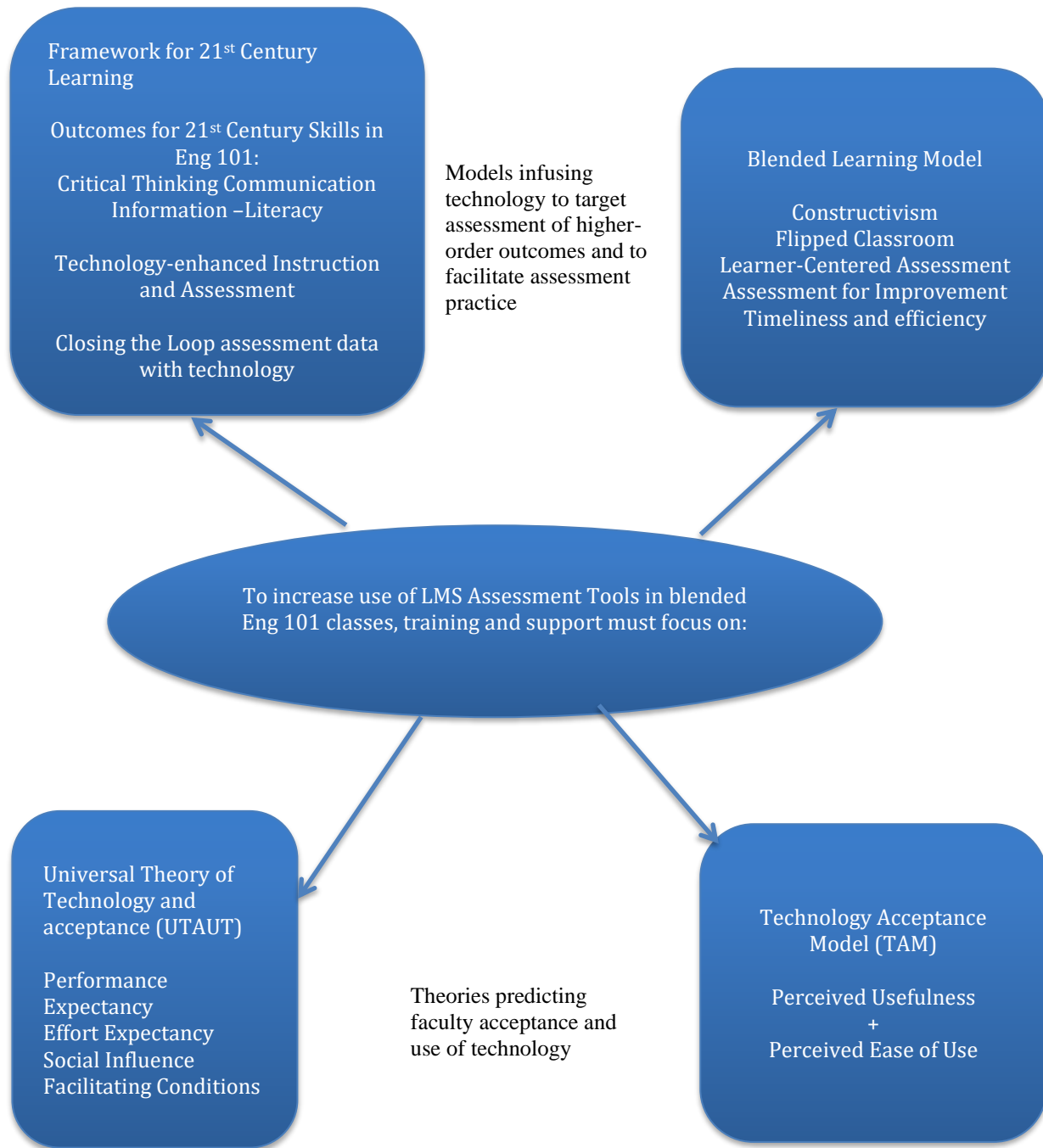
Assessment is a necessary and integral part of the process of designing, delivering and evaluating course and program outcomes to promote student success (Squires, 2016). In this age of rapid technological progress, educators are challenged with a digitally enriched learning environment that administrators are increasingly demanding them to adopt (Nicolaescu, 2016). The literature I reviewed provided a wealth of information on what research has been done currently in this field of the new-age technology and its impact on educational assessment and learning. The literature pointed to the value of learner-centered assessment in higher education and the experience with adoption by many faculty of learner-centered assessment techniques in the new millennium to measure and promote student learning (Webber, 2012). At the same time, the literature pointed to the gap in institutional use of such practice.

Through the above review, an idea of different methods to study institutional use of LMS was developed as well as different theoretical frameworks and models that could justify how the present system can be improved. Even though the existing literature on the LMS and its influence on teaching and learning are substantial, there are many avenues yet to be explored, in both content and approach, as the above findings demonstrate. Therefore, for this study I have focussed on a specific LMS, the Canvas system, and its use in the assessment process of a particular course, Eng 101, at a given college in New Jersey. I next provide the methodology of this study that could hopefully not only increase the use of LMS assessment tools in a particular discipline's content area, but also generate change in assessment culture throughout the institution and contribute further to the literature in this field.

Conceptual Framework

To undergo this study and understand some of the factors that underlie faculty adoption and use of LMS tools, I relied on two models. The first was TAM proposed by Davis (1986), which helped explain how perceived usefulness and perceived ease of use influenced how a user accepted or rejected technology. The findings from both the first quantitative survey and the first focus group confirmed this that faculty resisted using many of the CAT since they lacked proper understanding of their use and did not know how to use them effectively. The second model was UTAUT (Venkatesh et al., 2003), another technology acceptance model that holds four key constructs: performance, effort expectancy, social influence, and facilitating conditions that predicts behavioral intention to use technology. The experience of participants in the second focus group supports this model as faculty-led workshops enabled them to increase their use of the LMS assessment tools by helping them see the benefits through targeted training. The other learning models I have referred to are the blended-e-learning model (Graham, 2006) and the framework for twenty-first century learning (Miller, 2017) for the action-intervention plan. These models helped the V-FLC target the assessment of outcomes using CAT in a blended classroom setting. Together, these models helped create a conceptual framework that guided the design and implementation of the given study (see Figure 1 in appendix).

FIGURE 1
CONCEPTUAL FRAMEWORK OF ACTION-INTERVENTION PLAN

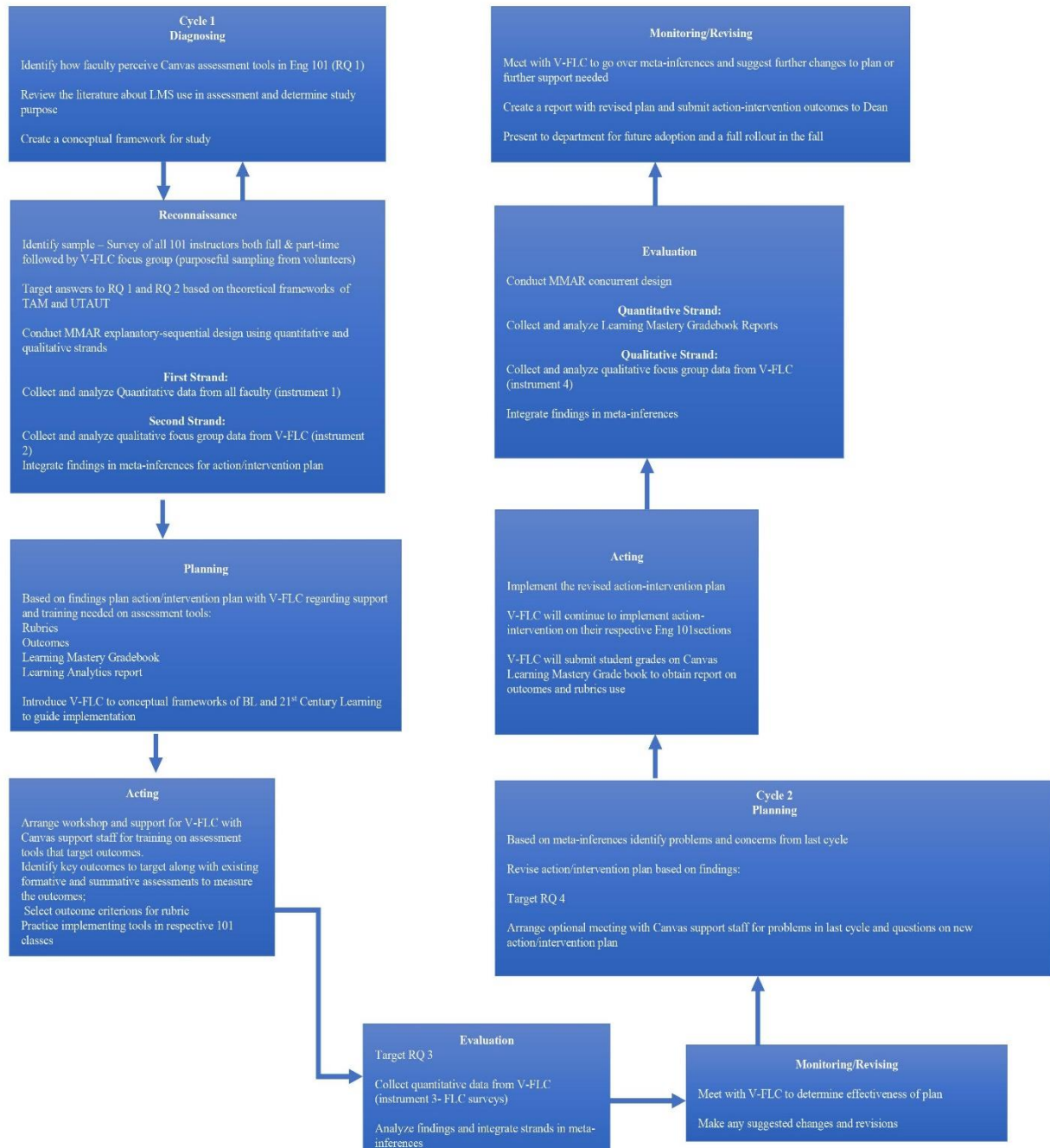


METHODOLOGY

Action research as a framework involves a systematic, cyclical process of action and reflection aimed to improve practice within a specific setting (Ivankova, 2015). I adapted a mixed methods action research design as developed by Ivankova (2015) to conduct my study involving two cycles and several phases of data collection and analysis (see Figure 2). To test content validity and internal consistency of the items

being measured as well as to check for clarity, I first piloted my survey and focus group questions on 4 faculty members from a different department who had taught Eng 101. This was done over the winter break in December 2020. Apart from some explanations needed to clarify some of the tools, no changes were suggested.

**FIGURE 2
STUDY DESIGN**



Study Design

Cycle 1

In the first cycle an explanatory sequential design was used where data was collected and analyzed in three phases. Next, to diagnose the problem I identified for the study in detail, I sent out the survey consisting of 16 items via the Humanities division dean to the entire English faculty in the second week of January 2021. In the first cycle, data was collected sequentially from the survey sent out to the entire English department, 22 members in total, followed by a virtual focus group with the V-FLC participants. 15 participants responded to the survey, which was the entire full-time English faculty. Of these, 6 volunteered to join me in the V-FLC.

In the reconnaissance phase, or fact-finding, the group met towards the end of February 2021 via my personal Zoom account. Informed consent was obtained from the participants to record the meeting. The purpose of the meeting was to discuss the survey results and explore faculty needs and challenges in using LMS assessment tools from a qualitative perspective. The virtual focus group protocol consisted of 11 items that was planned to take approximately close to an hour to answer. However, due to the nature of focus groups, the discussion took over two hours. The issues at stake along with the theoretical underpinnings of the action plan were collaboratively examined and agreed upon.

This was followed by the planning and acting phase when based on the findings the group decided to plan a series of faculty-led, mini-workshops to learn use of the assessment tools. These were 4 tools in total, but the group decided to not focus on the learning analytics tool at present due to time constraints. Of the 7 V-FLC members, only 4 continued to meet for the planning and intervention all through March 2021. The director of distance education and the instructional design specialist was also invited to some of these meetings for their input along with the Humanities division dean.

After the action-intervention of workshops, in the monitoring phase and evaluation phases, the second survey, consisting of 6 items, was sent out to the V-FLC members to measure their preparedness to use the different assessment tools after participating in the workshops (see Table 1). I discussed the results with the members and asked their input regarding further training or support needed for use of the tools. Members raised certain questions regarding their tool use experience that needed to be solved. In the final revision phase, certain changes were suggested to the workshops based on which further planning was made for classroom implementation of the tools in a second cycle in April 2021.

TABLE 1
CAT USE BY V-FLC AFTER PARTICIPATING IN FACULTY-LED WORKSHOPS

Canvas Assessment Tool Use	Excellent	Good	Fair	<u>POOR</u>
Quizzes & Surveys	1	2	1	1
Rubrics	3	1		1
Outcomes		3		2
Learning Analytics		3	1	1
Learning Mastery Gradebook for outcomes	1		2	2
Learning Mastery Gradebook for closing the loop			2	3

Cycle 2

Next, in the second cycle a concurrent design was implemented. Based on Ivankova and Wingo (2018), our second cycle began with planning further workshops that addressed questions that were raised at the end of the first cycle. In the action phase, V-FLC members started to implement the chosen assessment tools in one respective section each of their Eng 101 classes in their final assignments.

Next, to monitor and evaluate the action taken, a second virtual focus group was held at the end of the semester in mid May to discuss members' assessment experience with the tools and their needs for further use in the future. This meeting too held via my personal Zoom account took approximately two hours to

complete. During the revision phase, ways to make the assessment process using these LMS tools more sustainable were also discussed. Members also submitted their LMS grade book reports as evidence of their ability to use the Outcomes, Rubrics and Learning Mastery Gradebook tools (see Table 2). I also maintained analytical memos informally recording my thoughts and impressions on the meetings. These helped me reflect on all aspects of our data collection including participants' reactions and dynamics at play that helped inform the findings (Coghlan & Brannick, 2010). Such journaling also helped me practice researcher reflexivity, test our assumptions and justify the action plan. Secondary data was also collected following a document collection protocol to shed light on the problem and help inform the action-intervention plan. These included the Eng 101 Closing the Loop form, Eng 101 Assessment Form and the institutional General Education Outcomes found under the Outcomes folder.

TABLE 2
LEARNING MASTERY GRADEBOOK REPORT IN CYCLE 2

	OUTCOMES 7 SUBMISSION		RECORD
	Critical Reading	Grammar	Academic Ethics
Participants			
Participant 1	twice	once	once
Participant 2	twice	once	once
Participant 3	twice	twice	twice
Participant 4	once	once	once

Based on the findings of this cycle, a report (in the form of a power point) was published at the division meeting on Assessment Day, May 22nd suggesting better and more uniform use of these tools by Eng 101 faculty for the Fall 2021 semester. A follow-up meeting over the summer involving more faculty members was planned for this. I also presented the report, on behalf of the V-FLC, to the entire college population as a workshop on Professional Development Day to reach the wider college community on May 23rd. The data collection and analysis process that took place in different phases of the cycles along with the findings is next summarized below.

Evidence of Validity and Reliability

For the findings of any research study to be considered useful for practice, one must consider the rigor of research. In quantitative studies this is assessed through validity and reliability of instruments or tools (Heale & Twycross, 2015). Validity is measured through the inference quality in mixed-methods research (Ivankova, 2015). For our quantitative data, I have tried to ensure internal validity of the items being measured and the scoring system used by doing a pilot survey and getting feedback from my pilot participants. I have also tried to ensure validity by checking the data collected against the study purpose and research questions and sharing the findings with the V-FLC for their feedback. Additionally, I have tested the constructs against the theories of TAM and UTAUT for evidence of validity. The criterion was proved to be valid as they predicted behavior that was demonstrated by participants in the virtual focus group.

Equivalence, an attribute of reliability, is achieved through consistency of scores on an item ((Heale & Twycross, 2015). I have tried to achieve reliability by checking the consistency of response among multiple survey participants. I have also relied on inter-rater reliability by running the survey results through my co-researchers.

Evidence of Trustworthiness

To ensure trustworthiness, a mixed-methods study needs to meet the criteria of confirmability, credibility, dependability, and transferability (Ivankova, 2015). I have followed certain methods below keeping these criteria in mind.

Confirmability

To obtain confirmability, our study used a mixed methods approach in both cycles of data collection and analysis. This enabled us to confirm our data from both a quantitative and qualitative perspective. Using a joint display for the emerging themes helped the study team to compare the results and check whether the findings are consistent from both approaches. To further confirm the study results, I have made sure to engage in member checking and peer debriefings by sharing the codes, themes, findings and meta-inferences with the V-FLC members at each phase. I have also carefully transcribed the interviews, making sure to double-check the transcriptions and providing them to the focus group participants for verification of the message conveyed. I have also used quotes during my data analysis to capture the voice and feelings of the participants to ensure that they dictated my interpretation rather than my bias. I also confirmed our results using different perspectives, not only through the V-FLC, but outside liaisons like the director of Distance Education, the Instructional Support representative and the Dean of the Humanities division. Lastly, by carefully recording each step of the research process, reflecting on my role as an inside-researcher and maintaining analytical memos as a reflexive journal, I have attempted to confirm the decisions made and shed light on the conclusions reached.

Dependability

To ensure our study was dependable, I maintained an audit trail of our data collection methods and analysis in a reflexive journal that I shared with the V-FLC members. This enabled us to establish and maintain a systemic process of data collection and analysis. Also, by repeating the data collection and analysis process in consecutive cycles allowed us to test for dependability by comparing the results. Finally, by triangulating our data collection using different methods and sources also increased our study's dependability.

Credibility

There were different methods I used to establish credibility of the study. Transparency is essential for credibility (Rubin & Rubin, 2012). I have recorded the methodology we have used as accurately as possible, so that readers can understand the rationale behind the decision-making involved at each step. Mixed-methods approach enhances credibility (Ivankova, 2015). Our study involved both qualitative and quantitative data collection and analysis during each cycle that enabled triangulation and the findings were jointly displayed for validation. Discrepancies and surprises in the data analysis were noted in my reflexive journal that was shared with the V-FLC as well as the final report for transparency. The table below shows themes that emerged from specific data collection instruments and the research questions they supported. The audit trail enabled me to justify our decision-making at each step of the research along with member checking at each stage of the process. Sending out the initial survey to the entire Humanities division and inviting interested faculty from the above pool to participate helped reduce threat to credibility. Participants' stories need to be genuine and valid for credibility (Teddlie & Tashakkori, 2009). I took steps to ensure my data collection protocols and procedures are clear and that participants were well informed of the study's purpose beforehand. Confidentiality and anonymity were also guaranteed for trustworthiness. Credibility is also maintained through reporting of findings that include even disconfirming evidence (Litossiletti, 2003). I have shared our study results with the approval of the V-FLC, including areas for further improvement, division-wide during assessment day and college-wide during professional development day maintaining confidentiality of the participants. Such means collectively ensure credibility.

Transferability

In a mixed methods study it is important that the study findings can be applied to similar settings, context and people (Ivankova, 2015). Though action research is based on problem solving in a local context, the conclusions and inferences can be useful for similar scenarios. The questions that I designed for this study were carefully chosen to answer different aspects of the research problem and to ensure that different perspectives are captured (Rubin & Rubin, 2012). This is further ensured by the sampling strategies applied in the mixed method approach that were evaluated for consistency. Again, by keeping a clear record of each

step of the study, making sure that alternate explanations for the data is accounted for and making sure that the emerging themes are based on rich and thorough details provided by the virtual focus group participants helped make the study results transferable. By carefully evaluating the research process, revealing assumptions made and checking for consistency between the study purpose and results obtained, I hoped to enhance the study's transferability.

In spite of all precautions taken to ensure rigor and quality of our study, there were challenges. The focus of this study was limited to use of Canvas assessment tools by faculty teaching Eng 101. Data saturation is unavoidable in small sample sizes (Maxwell, 2013). Predicting an accurate sample size that would allow data saturation and no new codes or themes to emerge was difficult in this action research setting. Time and resources were also limitations to collecting data of appropriate breadth and richness that could negate all alternate hypotheses or explanations possible. Members of the V-FLC were also homogenous in terms of age and gender (mid-career, female faculty). Voices of diverse faculty groups were not included. Virtual data collection also had its own challenges including Zoom fatigue. Though, I could observe V-FLC members practice using the assessment tools, their actual implementation in the classrooms was not observed and only evident in the LMG report. However, by creating a strong rationale and conceptual framework for the study, triangulating our data, maintaining transparency and practicing researcher reflexivity and collaboration, hopefully rigor and quality have been established.

FINDINGS

Many studies have identified faculty development as the number one key issue (Educause Learning Initiative, 2017). With the rise in mass adoption of the different LMS platforms by higher education institutions, many studies have delved into faculty experience and motivation behind adoption of the LMS (Rhode et al., 2017). With this intention in mind, along with fellow-faculty, I designed and conducted this mixed-methods action research study over 22 weeks from January to May 2021. I first surveyed the entire English faculty to get an understanding of the Canvas assessment tools (CAT) they were using and factors that determined their willingness to use it more. Next, forming a V-FLC, I facilitated a focus group on what would support faculty use of CAT based on which we collaboratively participated in faculty-led workshops. This was followed by another quantitative round of data collection to evaluate and revise the workshops leading to another round of data collection through a focus group to determine participants experience in the faculty-led workshops to better use CAT. The data collected and analyzed in the focus groups led to the emergence of the following themes: benefits of CAT, problems of CAT, existing support surrounding use of CAT, and faculty needs for better use of CAT. Adopting a mixed-methods approach allows a balance of divergent viewpoints and strengthens the meta-inferences from both qualitative and quantitative approaches (Ivankova, 2015). Based on the meta-inferences from both strands of the study in consecutive cycles, the V-FLC was able to develop a plan for further and sustained use of the tools in the fall 2021 semester and make recommendations to the division for wide-scale adoption and use.

This study's findings contribute to the existing literature regarding addressing faculty needs in terms of CAT use to inform their practice on student outcomes. The study addresses the specific LMS assessment tool usage by faculty in a general education, humanities course, Eng 101, what drives that use, and ways to improve it. The findings of this study that took place in two consecutive cycles are summarized below:

- Most Eng 101 faculty are using some of the CAT like the rubrics and quizzes to some extent but not others like the Learning Mastery Gradebook, Outcomes or Learning Analytics.
- Most Eng 101 faculty believe that the CAT are beneficial for their practice and are willing to use them more based on their needs.
- Eng 101 faculty felt the support and training offered through professional development on campus did not address their needs in terms of better use of these tools.
- Eng 101 faculty who participated in faculty-led workshops found the experience to be beneficial in supporting their needs to use the CAT.

- Eng 101 faculty who participated in faculty-led workshops also found the experience challenging requiring different levels of support depending on the technological skill and knowledge of the user.
- Eng 101 faculty who participated in faculty-led workshops also suggested facilitating conditions, such as organizational, technical and mutual support, as needed for consistent and sustainable adoption of CAT.

The findings of this mixed-methods action research study suggest gaps between professional development being offered regarding the CAT and the actual needs of the faculty for adoption of these tools. The findings also solidify the idea that faculty-led professional development might be effective in filling those gaps. Currently, this is an area under-represented in the literature. Addressing these needs and involving faculty more in designing and assuming responsibility for their own professional development, might enable administrators and policy-makers to potentially improve faculty use of these tools to inform their practice and benefit student outcomes.

Limitations

The conclusions of this study must be analyzed with caution when considering generalization of the results. Action research by nature is specific to studying a problem in a local context with a goal of developing practical knowledge for those experiencing it (Coghlan & Brannick, 2010). As an insider-researcher, one brings pre-understanding of their workplace and system that also results in pre-assumptions and bias (Coghlan & Brannick, 2010; Stringer, 2014). The sample size in this case was very small to begin with since there are very limited faculty who teach Eng 101 and only full-timers who had been in the college for a significant portion of time and were willing to teach the course in a blended-format chose to join the V-FLC. Therefore, the sample was limited in characteristic and did not represent the broad and diverse perspective of other faculty, such as part-timers, other English courses or those in other divisions. Secondly, although the study was meant for blended classrooms as the context for the interventions, some of the V-FLC members actually had to try out the LMS tools in their remote-live classes due to Covid-related protocols where they could not be on campus. A third limitation of the study was in terms of timeframe. Ideally, action research involves at least three cycles of planning, acting and revising where the results of one cycle determine the outcomes of the next. However, due to the constraints of time and keeping in mind the commitments of the V-FLC members, it was decided that only two cycles would be conducted, over 22 weeks, focusing on three of the four assessment tools and a full role-out in the fall of the next semester depending on full faculty response to the V-FLC suggestions. The study also looked at specific LMS tools that related to assessment of outcomes. Other LMS tools such as discussion boards, assignments or announcements were not considered as part of the study though faculty might be using those more effectively for their practice. Since the study only involved V-FLC members attending the workshops and trying out the LMS assessment tools in their classrooms (one specific Eng 101 section each), there was no control group of faculty who had not attended the workshops. Also, due to time constraints, the V-FLC mainly worked on creating outcomes on Canvas and adding it to the rubrics and assignments in their modules. Use of the outcomes data to drive change was not yet implemented since they needed more hands-on training in implementing the given tools. A larger sample size involving other stakeholders as well, such as students, staff and administrators, over a longer timeframe, as well as an experimental study utilizing control and treatment groups along with random assignments, is therefore suggested for future research.

Nonetheless, the study does provide useable knowledge for the field of higher education and provides recommendations for future research, district policy and educational leaders. Several measures were taken to address threats to internal validity and research limitations that were discussed in the previous chapter. I have consciously engaged in reflective practice by maintaining a researcher journal to record my thoughts and feelings as the study developed. This allowed me to note, question, challenge and revise my own assumptions and biases as new, unexpected or surprising data presented itself. I also engaged in peer debriefing by presenting my codes and analysis to the V-FLC members and asking for their feedback and opinion throughout the research process to maintain transparency and trustworthiness. By capitalizing on

the strengths of a mixed-methods approach and maintaining rigor all throughout, the study will allow researchers to transfer the findings reached to different contexts and settings.

RECOMMENDATIONS AND IMPLICATIONS

Recommendations for Future Research

The findings of this study definitely leave room for future research in the determinants of LMS tool use by faculty and best practices to improve it. Future research could address the limitations of the study above and enlarge both the sample size, sample type as well as time frame for a more diverse and in-depth data source. For instance, exploring the use of LMS assessment tools in other divisions might provide valuable insight in further ways these tools can be adopted by faculty and other training available. Viewpoints of students who are the ultimate benefactors from any innovative pedagogy and tool use by faculty should also be considered by future research as well as other stakeholders like administrators and staff members such as the instructional support staff in the distance education division. While the existing literature does stress the need of assisting faculty through professional development to use assessment data for improvement, there need to be more practical examples that demonstrate such support with assessment efforts (Jankowski, Baker, & Kinzie, 2018; Schoepp & Benson, 2016). Further research need to demonstrate the connection between professional development and improvement in student outcomes (Yoon et al., 2007). There needs to be more research in established best practices regarding the ways faculty can harness the power of technological convergence to benefit student learning (Campbell, 2007; Penrod, 2005). Future research also needs to address the process of data-based-decision-making using the tools of the New Media (McCaul, 2015).

There is little research on bottom-up structures in educational settings (Macias, 2017). Major shifts in education, with an increased emphasis on accountability, make bottoms-up professional development necessary, since it reinforces ownership. In other words, faculty need to be given ownership over the outcomes that they are held accountable for. More models of teacher-led professional development need to be explored, as well as the shifting role of educators as decision-makers and designers of workshops that can promote engagement and positive communities among colleagues (Macias, 2017). At the same time there has been little research done on assessment of the LMS within educational organizations as both a web-based learning system for e-learning and as a supportive tool for blended learning environments (Ozkan & Koseler, 2009). More research needs to focus on how the LMS is being used and whether it is meeting the needs of faculty and students (Rhode et al., 2017).

Recommendations for District Policy

The climate change in higher education has made accountability and evidence-based learning the focus of policy makers and accrediting agencies (Everett, 2015; Rhodes, 2012; Woods, 2016). Innovative pedagogy and improvement-based assessment efforts are emphasized (Lock et al., 2018). Yet, the actual use of assessment data to make instructional decisions or inform practice still needs to be addressed by district policy by supporting institutions in “closing the loop” (Banta & Blauch, 2011, pp. 22)

Policymakers need to consider the paradigm shift in higher education caused by the influx of digital tools and the advent of new media, which have revolutionized all areas of teaching, learning, and assessment (Khan, 2014; Salisbury, 2018). Over the years, higher education institutions have widely integrated the LMS with their infrastructure, encouraged faculty adoption and provided user support and training (Rhode et al., 2017). Students have also identified the LMS as among the most important instructional technologies for their academic success (Rhode et al., 2017). Yet, faculty adoption of LMS tools and features still remain limited. Policymakers also need to encourage and support more efforts to introduce the affordances of new media in the technological infrastructure of institutions’ as well as plans to incorporate them more in the classroom for assessment purpose (Arum, Roksa, & Cook, 2016).

Policymakers need to consider that often in matters of governance and academic decision-making, oftentimes the viewpoint or needs of the stakeholders closest to the actual learning, the faculty, are not considered. Faculty play a key role in supporting, empowering, and advancing students academic success

and intellectual independence (Campbell, 2007). Yet, their voice is often left unheard in matters of curriculum or instructional support. The existing literature has identified employee training and professional development as a key practice of high-performing institutions (Repetto & Trentin, 2011). There seems to be an increase in need to create professional-development that is collectively-constructed by faculty, focused on their needs, inquiry-based, use context-specific programs, and conducted in a neutral environment (Dyer, 2013). Apart from a better infrastructure in place for training on e-assessment practices, such a system needs to be embedded in the policies and practices of the institution (Jiao, 2015; McCain, 2010).

Recommendations for Educational Leaders

Leaders in higher education, especially community colleges, can really gain insight from the findings of this MMAR study. Faculty often show resistance to innovative assessment processes since they feel disengaged and lack ownership over such initiative that seems imposed (Carless, Joughin, & Mok, 2006; Coe et al., 2019). Any training they receive also needs to meet their needs (Repetto & Trentin, 2011). Educational leaders, such as administrators and deans, need to gain the trust and respect of the faculty more by consulting them more often and being transparent of the benefits to the entire college community. As many studies have discussed before, a positive academic learning environment is necessary for educators to embrace a role of leadership (Macias, 2017). Bottoms-up structured approach, possible through grass root leadership, enables educators to collaborate with other stakeholders like instructional support staff and administrators to construct knowledge. The outcome of a bottoms-up professional development approach involves tapping into the talents of educators to support the learning process with resources (Macias, 2017). While not replacing formal professional development workshops being offered at the institute, such a process definitely enables educators to continue refining their skills outside of mandated trainings, based on their needs. Strong administrative leadership combined with strong leadership among faculty can help bring about transformation change that is central to an institution's mission (Northouse, 2015).

Educational leaders can also encourage new and innovative assessment practices in keeping with the educational reform and assessment culture taking place nation-wide (Reder & Crimmins, 2018; Shute & Becker, 2010). They must ensure best practice in assessment that addresses the achievement of competencies and skills required in the 21st century workplace (Banta & Blaich, 2011; Duarte et al., 2015; Reder & Crimmins, 2018). Educational leaders need to identify, highlight and support more practices that reflect evidence of learning (Oliveri & Markle, 2017; Webber, 2012). They need to frame assessment as a scholarly activity and offer professional training to strengthen assessment practice (Wang & Hurley, 2012). At a time when community-colleges, nationwide, are experiencing a steep drop in graduation rates and low enrollment, faculty need to reposition themselves as educational leaders and drive change that supports student success on key outcomes based on the tools of the twenty-first century.

For current educational leaders, the study also throws light on the need to understand faculty preferences and recognize their challenges in terms of technological tool adoption. Changing educational policy demands dictate that educational leaders not only rethink traditional workplace structure but also how they offer professional development. As an agent of change, educational leaders need to recognize the changing needs of the workforce environment that may dictate changing approaches to assessment requiring changes in content and pedagogy. In terms of professional training and support, the educational leader might make recommendations for more discipline and course-level focus and emphasize training of tools that are both easy to use and useful.

The findings of this study also help educational leaders to understand that one size fits all attitude will not work in terms of faculty adoption of technological tools. Different faculty are at different levels based on their background, expertise and attitude towards technological tool adoption. Professional training and support need to be broken down and target their differentiated needs. The study helps educational leaders to explore ways to create more buy-in for faculty to adopt LMS tools to inform their practice. These include recognizing and encouraging faculty effort to adapt to an ever-changing educational environment through new tools and pedagogy, creating more opportunities for faculty involvement and collaboration in matters impacting their own practice, and promoting a supportive and inclusive environment of professional

learning and support. Such professional training that is on-going along with a supportive, self-guided, self-regulated training framework, might help educators overcome the challenges of implementing a new technology (Bhati et al., 2010).

Implications for Practice

This study definitely has contributed significantly to both my personal and professional growth. As a senior faculty member who is also a staunch advocate for technological tool adoption and blended learning, I was always puzzled as to faculty resistance to using the LMS tools that appeared to effectively enhance our practice. The study's findings highlighted the needs and challenges of my co-workers and challenged my expectations regarding the process and purpose of adopting these tools. I am now more attuned to the problems that faculty may face when provided with a new tool to teach and more aware of the different steps that need to be in place to ensure they can integrate these tools successfully for their practice. I am also more aware of how the LMS tools provide data for effective and efficient feedback to students as well as to make changes to my own instructional content and pedagogy. I am now more conscious of how I assess my students and use the results to not only offer feedback, but also enhance my own teaching to help them achieve the course outcomes. Most importantly, I can now map my course outcomes to my assessments and classroom activities more conveniently using the LMS tools.

Professionally, I feel, this study has allowed me to experience the power of faculty-led workshops to influence change. Doing an action research study and engaging in meta-learning has also honed my reflective skills and allowed me to engage in more sense-making taking cues from not only what is said but often what is unsaid and implied. Such reflective practice will definitely come in handy in my future role on different divisional or college-wide committees and taskforces where team building and mutual interdependence will be needed to meet our goals or commitments.

By engaging in this study using a practitioner-as-researcher model, I have been able to grow as an educational leader. My goal as an educator has always been to prioritize student success and as a result of this study, I realized that in order to achieve that goal I needed the support and collaboration of my fellow faculty and administration. Faculty often resist change due to loss of familiar experiences and need to be persuaded and reassured of the long-term benefits of transition (Burke, 2014). I feel this study has allowed me to articulate and create a plan for achieving student-centered learning and gain the confidence and support of many of my colleagues. French and Raven in Wren (1995) describe different power tactics a leader might employ. With my V-FLC establishing a personal bond helped to gain their confidence and willingness to aide and support me in this study. I also offered them direction and control as facilitator, which helped me earn their trust and respect. I feel my identity as a woman and minority have also impacted my leadership practice as demonstrated in the study. As Rosener in Wren (1995) discusses, she talks about how women leaders follow a model of interactive leadership where they encourage participation, share power and information, enhance the self-worth of others and energize them. I feel these qualities definitely enhanced the teamwork spirit and allowed us to work congenially.

Most importantly the study allowed me to engage in reflective practice, which I feel is vital to becoming a true leader. It facilitates double-loop learning (Osterman and Kottkamp, 2004). A good leader should always reflect on their practices to see what works and why? They need to detect flaws in their actions and reflect upon why they exist and what could be done differently. By engaging in reflective practice throughout the study I was able to collaborative effort to solve problems and answer questions.

Overall, I have always envisioned myself as a transformational leader who can enact change within the community by including all stake-holders in the decision-making process and offering them a voice (Northouse, 2015; Wren, 1995). The above MMAR study gave me an opportunity to practice my transformational leadership skills and enabled me to engage fellow-faculty in a grass root leadership effort that could impact our own practice. I believe by honing my leadership skills and continuing in this role of a change agent, I will be able to influence many others to join in the mission of cultural change for our future benefit.

CONCLUSION

The learning management system has become a critical tool in higher education and a driving force in online learning (Rhode et al., 2017). A change in the teaching-learning context has been identified over the past decade where teacher and student interaction takes place with increasing frequency through learning management systems. Recent studies have also pointed out that collaborative learning in virtual environments improves learning outcomes, however these interactive spaces need to be designed to facilitate self-regulated learning and feedback oriented processes (Sais-Manzanares et al., 2016). Understanding how faculty choose to adopt the LMS is a stepping stone to understand how they may adopt other pedagogical and technological innovations (Rhode et al., 2017).

This V-FLC-led action research study sought to explore faculty use of Canvas assessment tools in a general education course of a discipline within a community college. The goal was to identify factors that supported their use of these tools and try to implement those in faculty-led workshops to help increase use of these tools. Using a mixed methods approach of both quantitative and qualitative data collection in repeated cycles, the findings that emerged highlighted faculty needs and challenges in terms of increased and sustained use of Canvas assessment tools for Eng 101 courses.

There are several future directions that the study of LMS tools and faculty practice might consider. The study lists several limitations that leave much to be learned regarding LMS tool use and faculty motivation to adopt them. Future directions for further research have also been suggested above. Yet, the insights from this MMAR study might prove useful for educational leaders, administrators and policymakers when considering professional development that supports and sustains faculty use of LMS tools for student success.

This MMAR study provides an opportunity for community college leadership to consider how best to support faculty in their needs with regards to adopting the LMS platform and its digital tools to inform their practice. Professional development that involves course-specific training and support, differentiated instruction based on faculty skill-level and pedagogical needs and geared towards student improvement on key course outcomes should be offered. Such training need also to be mindful of faculty constraints such as those related to time and other commitments such as committee work and offered in a paced manner at regular intervals all throughout the academic year. Community college leadership will also benefit from discussing incentives to faculty for attending such training or workshops in the form of monetary benefits, awards, certificates of recognition, or praise. Involvement of adjunct faculty who teach a major share of general education courses like Eng 101 need to be encouraged for sustainability and widespread use of the LMS tools.

Creating a cultural change in assessment policy, one that is learner-centered and focused on student achievement of outcomes, requires change in leadership model as well. Instead of decisions coming down from above regarding what works best in the classroom, faculty need to take initiative in the decision-making process. Collaborating with administrators and staff in a climate of mutual trust and trustworthiness, will allow faculty to use the LMS tools meaningfully and adapt to the digital landscape in a way that best prepares students for their future success.

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