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Blended Learning vs. Pure-printed Modules: Assessing its Effectiveness and Students' Perceptions

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Abstract

The pandemic has brought an enormous shift within the face of education, especially with the implementation of remote learning through learning delivery modality. These distance learning modalities are selected to support the circumstances of students and teachers to continue schooling. A descriptive survey was conducted among the Bachelor of Secondary Education (BSE) students in a Professional Education course at Quirino State University to assess the effectiveness and overall satisfaction of blended learning and pure printed modules delivery of instruction. One group of students was provided with pure-printed modules and another group with a blended-learning approach which included a combination of online and offline delivery of instruction. Overall perceptions of the course, instructor, and learning outcomes were positive for both groups. Students also felt strongly that they might use the fabric in their careers. The majority of the scholars within the blended learning section indicated that they might take another professional education course using this approach if it were offered. However, some interesting differences were noted. Specifically, students in the pure printed modules setting were more satisfied with the clarity of instruction and felt more strongly that they gained an appreciation of the concepts in the field. On the other hand, blended-learning students felt more strongly that their analytical skills improved as a result of the course. The results suggest that the two delivery methods were similar in terms of ultimate learning outcomes, but that both could also be improved by incorporating aspects of the opposite.

Keywords: *New Normal, Blended Learning, Pure Printed Modules, Effectiveness, Perception*

1. INTRODUCTION

The pandemic has brought an enormous shift within the face of education, especially with the implementation of remote learning through learning delivery modality. These distance learning modalities are selected to support the circumstances of students and teachers to continue schooling. Over the last few years, distance education has turned out to be a major trend in education. In a recent year, quite 100 professional conferences addressed some aspect of distance education, and almost every professional organization's publications and conferences have shown an enormous increase in the number of presentations and articles related to distance education. Many educators are making grand claims about how distance education is probably going to vary in education and training [1].

Meanwhile, supported reports on the results of previous studies, the implementation of distance learning still has many challenges and these challenges are caused by various aspects. The implementation of effective and successful distance education is strongly influenced by aspects of student readiness, aspects of learning management systems, aspects of infrastructure support, and institutional commitment [2].

Courses incorporating online learning range from those that are completely online, with few meetings, to those that provide no meetings during the semester. An example of the latter is one in which the web is the primary instruction mode, but there are a limited number of meetings at various points in the semester. This "blended learning" approach may be appealing to many students because it offers the convenience of a primary online course, but allows for at least a few meetings with the instructor in person. This approach allows seeing the instructor face to face and avoids a completely impersonal course experience, thereby creating a learning community without an overly burdensome meeting schedule.

To ensure that course objectives are accomplished, it is important to understand how effective the alternative course delivery methods are when compared to the pure-printed modules approach. Some research has examined the differences in effectiveness between courses that are completely online and those that use pure printed modules,

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with mixed results. However, very little research has examined the differences between pure printed modules and blended learning approaches. Therefore, the researcher surveyed students at Quirino State University to assess the perceived effectiveness of the two-course delivery methods.

Distance education has a major and varied impact worldwide. Whereas politics and economics influence how distance education is employed, a strong demand exists in the world for distance education opportunities. Distance education has been applied to a tremendous variety of programs serving numerous audiences via a wide variety of media. Some use print, some use telecommunications, and many use both. Finally, rapid changes in technology challenge the traditional ways in which distance education is defined [1].

As cited by Simonson et al [1], distance education is certainly not a sustaining technology. Rather, distance education, virtual schooling, and e-learning are disruptive. For example, distance education is aimed at students (older, working, remotely located learners) who are "ignored by established companies" (traditional schools). Distance education presents a different package of performance attributes that are not valued by existing customers. Distance education has come to "dominate by filling a role that the older technology could not fill."

As an individual student, motivation and learning ability are low, access to technology is weak, and financial constraints, and study time. Instructional, namely a less effective learning process. Institutionally, there was a change in the service and learning administration system [3]. From the student aspect, the challenges are related to learning preparation, learning styles, technical skills, participation, and expectations. From the educator aspect, it deals with changing roles, transitioning learning models, learning styles, and the learning process.

From the aspect of content management, it relates to content development, learning management systems, and technology support. Finally, institutional challenges are related to the professional development of educators, training for students, and infrastructure support [4]. The certainty of learning outcomes is strongly influenced by the place, environment, and time of the study. Which, place, environment, and time of study are determined by the student himself. Educators cannot control ethics, attitudes, behavior, and learning progress. Feedback and educational philosophy do not occur. The role of educators in education is lost and it is necessary to prepare learning materials properly [5].

According to Duran [6], eidetic reduction (also known as eidos or essence) focuses on the researcher reflectively becoming aware of aspects of the phenomenon that make it unique from other experiences. The aim of eidetic reduction is not a universal generalization about the phenomenon but an exploration of possible meanings that are by nature incomplete and tentative. Part of completing the eidetic reduction is to explore variations on the phenomenon by comparing it "with other related but different phenomena".

As blended learning approaches in teachers' training increase, the need to ensure effective courses is growing as well. Kante [7] presented some factors affecting the effectiveness of blended learning training programs as follows: (a) Online training should allow teachers to be self-directed, as teachers display a readiness to learn when they have a perceived need, and they desire immediate application of new skills and knowledge; (b) online training should be embedded in the reality of schools and teacher's daily practice, making their work professional and personal; (c) online training should promote collaborative activities and connect teachers to a larger teaching community; and (d) online training should provide online resources for teachers and motivate them to develop, find and share ideas that promote meaningful uses of technology in teaching. Kante [7] also suggested that online training must be supported by face-to-face interaction, especially at the early stage of the teacher's encounter with technology.

There is ongoing research investigating how to create effective blended learning experiences that incorporate both face-to-face and online learning elements. Collis and Jung [8] suggested that training systems should include challenging activities to promote discussion or collaboration between 462 Mouzakis (a) trainer and trainee, (b) trainee and trainee, and (c) trainee and materials. They should also include some practice such as exercises with some form of feedback, group activities, and assessment.

Recent research has shown that blended learning courses support far greater interaction than otherwise possible from face-to-face instruction [9]. Web resources and online course management offer easier access to both learners and facilitators through discussion groups and email, and they also allow access to material that might not be available otherwise. Several studies have found that blended learning formats have the potential to facilitate collaborative learning environments where students can be actively engaged and potentially learn more than in a traditional on-campus classroom [10].

Schwartzman and Tuttle [11] claimed that learners participated more actively in the teaching process as they became comfortable with the facilitator and their peers. There has been an increasing interest in the facilitator's role in blended learning courses. Many researchers have agreed that the ability to facilitate both face-to-face and online elements is more important than extensive subject matter knowledge for the facilitator in blended learning environments [12].

Distance education features a major and varied impact worldwide. Whereas politics and economics influence how distance education is used, a robust demand exists within the world for distance education opportunities. Distance education has been applied to a tremendous variety of programs serving numerous audiences via a wide variety of media. Some use print, some use telecommunications, and lots of use both. Finally, rapid changes in technology challenge the traditional ways in which distance education is defined [1].

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Some studies have examined the technological components of blended learning courses. The appropriate technological infrastructure (Internet access, connection speed, availability of access, friendly user interface, web-based resources, technical assistance to facilitators and learners) is an essential requirement for online learning, and many studies highlight the operational issues that need to be considered when planning such systems [13], [14]. This brief review of the current literature highlights some of the important concepts on research on blended learning, and it includes issues such as instructional design, learning materials, the facilitator's role, interaction, collaboration, team-oriented activities, and the influence of technical infrastructure upon the instructional process as well.

The researcher assesses the relative effectiveness of blended-learning and pure-printed module delivery along several important dimensions relating to the following general research questions:

1. What are the comparative overall perceptions of the course as to:
a. Blended learning and
b. Pure printed modules?
2. What are the learning outcomes and skills developed using the:
a. Blended learning and
b. Pure printed modules?
3. Is there a significant difference between blended learning and pure printed modules as to:
a. Perception of the course and
b. Learning outcomes and skills developed?

2. RESEARCH METHODOLOGY

Student participants were enrolled in either pure printed modules (n=16) or a blended learning section (n=35) of a Professional Education course that covered introductory material in EDUC 20B. The same instructor taught each class and administered the course in the same way, except for the method of course delivery. Using this approach allowed us to "control" for differences due to instructor, evaluation criteria, and other potential confounds. The pure printed modules and blended learning sections involve two separate sections over two semesters. Within delivery methods, we compared sections and found no significant difference between semesters on the survey item responses.

The blended learning sections consisted of every week's online meetings during the semester. All meetings were online for two hours each week during the semester. The pure printed modules met only once a week during the semester, only if the instructor distributed the modules.

The pure printed module and blended learning sections were identical in terms of the factors that determined students' grades and the relative weight of each factor. The instructor is not conducting classes in pure printed module students; students only communicate with the instructor to ask questions about the topic they don't understand using text messages. In the blended learning sections, the instructor conducted every weekly meeting using a combination of lecture and discussion. Online class meetings primarily focused on specific students' questions e-mailed to the instructor before online meetings. The instructor required students in the blended learning sections to participate in online class meetings.

3. RESULTS AND DISCUSSION

As to **general course effectiveness**, table 1 shows the mean responses for several questions intended to provide different measures of the comparative effectiveness of the two alternative course delivery methods. Students responded to each of these items on a five-point scale from 1 (strongly disagree) to 5 (strongly agree). The researchers used t-tests to examine the comparative differences.

Table 1: Comparative Overall Perceptions of the Course

ITEMS	BLENDED LEARNING (n=35)	Qualitative Description	PURE PRINTED MODULES (n=16)	Qualitative Description
Overall, this was an excellent course.	4.03	Agree	4.63	Strongly agree
Overall, the instructor was an excellent teacher.	4.37	Agree	4.25	agree
I learned a great deal from this course.	4.00	Agree	4.63	Strongly agree
I gained a good understanding of concepts/principles in this field.	3.89	Agree	4.31	agree
The clarity of instruction was good.	3.97	Agree	4.50	Strongly agree
I will use what I learned in EDUC 20B in my career.	4.23	Agree	4.56	Strongly agree

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I deepened my interest in the subject matter of this course.	3.97	Agree	4.38	agree
I was motivated to do well in EDUC 20B.	4.06	Agree	4.50	Strongly agree
I enjoyed the class	4.14	Agree	4.25	Agree
The course was interesting	4.11	Agree	4.44	Agree
The course was difficult	3.40	Moderately agree	3.38	Moderately agree
I am confident in my ability to understand and apply concepts learned in this course.	3.83	Agree	3.88	Agree
OVERALL MEAN	**4.00**	**Agree**	**4.31**	**Agree**
**1.00-1.49: Strongly disagree; 1.50-2.49: Disagree; 2.50-3.49: Moderately agree; 3:50- 4.49: Agree; 4.50-5.00: Strongly agree*				

Further, as shown in Table 1, both groups had fairly good perceptions of the course. Although the mean response for item 1 was higher for those learning under the pure printed modules setting, the difference for that item is statistically significant. A separate item (different scale) solicited students' expected grades, and the responses were also significantly different for that item. In addition, both groups indicated reasonably favorable responses in terms of learning from the course (Item 3). Therefore, overall learning and performance appear to be measurably different between the two groups. Additionally, students in both groups indicated a belief that the material they learned would benefit them in their careers (Item 6).

In terms of general satisfaction with the results of the class, students in pure printed modules and blended learning indicate at least a moderate level of agreement that the class deepened their interest in the subject matter (Item 7). The difference in means was not significant for this item. In addition, the instructor appears to have been quite successful in motivating both sections of students to do well (Item 8) and in creating an enjoyable course (Item 9). Again, the differences for these items were not statistically significant.

A further look at Table 1 reveals some interesting differences, however. Despite the comparable result and the fact that both courses had the same instructor, students in pure printed modules appear significantly more satisfied with the clarity of the instruction itself (Item 5) and more strongly that they gained a good understanding of concepts and principles in the field (Item 4). However, their overall perceptions of the instructor were more favorable to the students in blended learning than the perceptions of their counterparts in the pure printed modules (Item 2). This result is somewhat surprising and suggests something else offsetting the impact of being relatively less satisfied with the clarity of instruction. Blended learning students appear to have found the course more difficult (Item 11), perhaps related to their perceptions of instructional clarity during online meetings.

In the overall perception of the course, table 1 showed that pure printed modules got the highest score with an overall weighted mean of 4.31, respectively, with qualitative description agree. Blended learning got the lowest score with a weighted mean of 4 with qualitative description agrees.

Therefore, pure printed modules are the most preferred method of delivery to the students in the course because students engage themselves in learning the concepts presented in the module. They develop a sense of responsibility in accomplishing the tasks provided. This is contrary to the study of Chen and Jones [15] which blended learning is the most preferred method of delivery of the students in the course accounting. They preferred blended learning because it allows them to study in a digital environment with virtual tools that they are comfortable with and frequently use in their daily lives. Nevertheless, both methods of delivery are acceptable.

As to **skills developed**, table 2 shows mean responses related to several skills commonly named as desirable for development in university curricula. Again, students responded on a scale from 1 (strongly disagree) to 5 (strongly agree).

Table 2: Learning Outcomes and Skills Developed

ITEMS	BLENDED LEARNING	Qualitative Description	PURE PRINTED MODULES	Qualitative Description

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My writing skills have improved as a result of this course	3.80	Agree	3.88	Agree
My analytical skills have improved as a result of this course.	3.77	Agree	3.75	Agree
My interpersonal skills have improved as a result of this course.	3.71	Agree	3.88	Agree
My computer skills have improved as a result of this course.	3.83	Agree	3.38	Moderately agree
I am confident in determining what is relevant in solving problems.	3.77	Agree	3.69	Agree
OVERALL MEAN	**3.78**	**Agree**	**3.72**	**Agree**
1.00-1.49: Strongly disagree; 1.50-2.49: Disagree; 2.50-3.49: Moderately agree; 3:50- 4.49: Agree; 4.50-5.00: Strongly agree				

As mentioned previously related to Table 1, blended-learning students appear to have found the course more difficult. Interestingly, however, blended learning students indicated significantly more agreement that their analytical skills improved as a result of the course (Item 14). Since the sections differed only in delivery method, this difference is intriguing. Online or primarily online delivery may place more burden on the learner in some cases than pure printed modules delivery because the student cannot rely nearly as much on class attendance to clear up questions on the material. Therefore, perhaps these students had to rely more on their effort and had to find ways on their own to clear up confusing topics.

Not surprisingly, blended learning students indicated more strongly that their computer skills increased as a result of the course (Item 16). However, likely due to students' pre-existing level of comfort with computers, neither group indicated a very high mean response. In any case, computer skill enhancement was not a primary objective of the course. Likewise, although the enhancement of writing skills is universally believed an important result of college curricula, neither group of students appeared to perceive improvement in this area (Item 13). Again, however, writing skill enhancement might reasonably be expected only as a secondary objective of most professional courses. Finally, neither group indicated very strongly that their interpersonal skills improved as a result of the course.

In the outcomes of the overall skill developed, blended-learning students appear to have a lower score in the overall perception of the course. Interestingly, however, blended learning students indicated significantly more agreement that their skills developed improved as a result of the course with an overall weighted mean of 3.78 with qualitative description agree. Since the sections differed only in delivery method, this difference is intriguing. Pure printed module delivery may place more burden on the learner in some cases than blended learning delivery because the student cannot rely nearly to clear up questions on the material. Therefore, perhaps these students had to rely more on their effort and had to find ways on their own to clear up confusing topics.

Both groups of students indicated that they were reasonably confident in determining what was relevant for solving problems. Problem-solving ability is generally regarded as an important skill to develop in today's curriculum. It becomes an essential part of professional development. According to Gajdos [16], one of the fundamental skills teachers need to learn is efficient problem-solving. Problem-solving skills are strongly linked to general cognitive and metacognitive processes such as problem interpretation and representation, reasoning, information gathering, assessment, solutions development, decision-making, preparation, reflection, and evaluation [16]. According to the study of J. Orgovanyi-Gajdos [17], efficient problem-solving skill is one of the fundamental competencies teachers need to possess.

Table 3: Significant Difference between Blended learning and pure printed modules

	Delivery Method	Mean	Variance	T-stat	P-value	T-crit	Decision
Comparative Overall Perception of the Course	Blended Learning	4.00	0.06	4.32	.001	2.20	Reject Ho
	Pure Printed Modules	4.31	0.13				
Skill Developed	Blended Learning	3.78	0.001	0.56	.600	2.78	Accept Ho
	Pure Printed Modules	3.72	0.04				

As to the significant difference in the modes of lesson delivery, Table 3 presents the result. In the Comparative Overall Perception of the course, the computed value for T (4.32) is greater than the critical value for T (2.20), with a p-value less than 0.05 alpha level. Therefore, THERE IS A SIGNIFICANT DIFFERENCE between blended learning (BL) and pure printed modules (PPM). This implies that the

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use of either BL and PPM SIGNIFICANTLY INFLUENCES the overall perception of students in the course.

In skills developed, the table showed that the computed value for T (0.56) is less than the critical value for T (2.78), with a p-value (0.60) greater than the alpha level (0.05), thus it is NOT SIGNIFICANT. Hence, the null hypothesis that there is no significant difference between the use of BL and PPM in terms of skills development is ACCEPTED at 0.05 alpha level. Therefore, THERE IS NO SIGNIFICANT DIFFERENCE in the skills developed in the course with respect to the use of BL or PPM. It implies that skills developed in the course are not necessarily affected by whichever mode of course delivery.

4. CONCLUSIONS AND FUTURE WORKS

Based on the findings of the study, the following conclusion was drawn:

In the comparative overall perception of the course, the pure printed module mode of delivery appears to be a significantly better preference to student-respondents as the mode of lesson delivery. As to skills developed, participants of the study revealed that blended learning has statistically the same results as pure printed module delivery of instruction. Moreover, results revealed a significant difference in the comparative overall perception of the course using the blended and pure printed modules delivery of instruction. Yet there is no significant difference in the skills developed. However, both methods of delivery are acceptable.

This survey was administered at only one school and involved EDUC 20B course in professional education. Therefore, inferences cannot necessarily be made about other courses, institutions, and instructors. Although this approach may be seen as a limitation, it was necessary because an important goal of this study was to be able to make meaningful comparisons between two delivery methods. The BTLED-HE 3 and BTLED-IA 3 sections were taught by the same instructor and differed only in the delivery method. Although two sections of each delivery method were used, activities, grading, and other course administration procedures were carried out the same in both courses. Therefore, we were able to reasonably ascertain that the significant difference in the comparative overall perception of the course is primarily attributable to their perception and not to class performance. Other factors such as different instructors, universities, course designs, and course subject matter could also account for the significant difference observed. Certainly, additional future studies are warranted in other courses and at other institutions to assess whether the results are similar to those from this study. In addition, future research should compare courses taught solely using a web-based approach that adds any incremental effectiveness. Still, this study provides some early evidence on the latter question and we can glean several insights from this survey, summarized in the following paragraphs.

In terms of course performance and overall course satisfaction, students learning under the two-course delivery methods appeared to differ significantly in their assessments. Students in both sections indicated a strong amount of utility from the course in terms of usefulness to their careers.

Based on the result of the survey, however, the pure printed modules setting continues to add value in terms of instruction clarity. Students and instructors alike may simply be more comfortable with the use of printed modules. This allows the instructor to explain more informally how to work professional problems and she/he is not encumbered by the need to explain material using a computer keyboard. The instructor can perhaps more easily circle numbers or point to items of emphasis while using pure printed modules. The pure printed modules approach may offer incremental value in terms of learning and gaining an appreciation of the concepts in the field. Perhaps students using this mode of delivery, simply by using their books more extensively in the learning process, use more resources from the books and broaden their understanding by retrieving more resources.

If this case, then it is likely that instructors could enhance the pure printed module approach by requiring more use of the web. This increased web emphasis may encourage the student not to rely as extensively on mere classroom attendance, which sometimes amounts only to passive participation. Also, online "meetings" sometimes force students to be more prepared and to participate more actively in the learning process than they might while sitting in the classroom. They may therefore be less likely to become detached and passive in the process. Of course, some instructors are very adept at incorporating active learning techniques and can minimize or even negate the tendency for students in the classroom to become detached. To the extent that differential appreciation of the concepts is attributable to greater student involvement, these instructors will be effective in closing the gap and helping students to develop this deeper understanding.

Based on these results, blended learning does not appear to impede students' development of certain skills. Students' perceptions of their general ability to determine what is relevant in problem-solving were not significantly different from those participating in the two alternative delivery methods. Blended-learning students had stronger perceptions of their improvement in analytical skills than did students taking the same class in pure printed modules setting. Although this study does not offer definitive evidence, the latter finding may be related to their perceptions of gaining an appreciation of the concepts, discussed in the preceding paragraph.

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