Attrition In Distance Education: A Meta-Analysis

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Abstract

This meta-analysis reviews twenty years of research on the effect of attrition predictor variables on distance education post-secondary learners. The predictor variables were derived from a series of attrition models, theories, and studies, and then further identified, defined, and grouped for additional analysis to determine their specific effect on attrition. Thirty studies on distance education attrition met the criteria for inclusion in this meta-analysis. There were seven moderator variables coded for each of 30 studies producing 284 separate ($k=284$) effects. The overall effect size was 0.059, concluding there is no significant pattern in identifying variables that cause or contribute to distance education attrition within the empirical literature reviewed.

Index words: Distance Education, Attrition, Completion, Persistence, Retention, Meta-Analysis, Effect Size

Introduction

Attrition has been a longstanding problem for almost all higher education institutions, and it is even more so with distance education seeing even higher rates (Carr, 2000; Holmberg, 1986; Parker, 2003). Carr states that attrition in distance education is not a recent discovery and while several research studies have addressed the subject, they have for the most part, all taken a different perspective on the issue.

To date, there have been a number of wide-ranging studies that have been conducted to explore a variety of these predictor variables. For example, there are studies examining instructional design (Chyung, 2001; Van Schaik, Barker, & Beckstrand, 2003), demographics (Despain, 2003; Eisenberg & Dowsett, 1990; Frew & Weber, 1995), community engagement (Pugliese, 1994), program satisfaction (Schell & Thornton, 1985), and feedback and turnaround time (Taylor et al., 1986), to name just a few. There have also been a number of research studies that have tried to adopt many of the constructs outlined in Tinto’s (1975) retention model. These studies tried either to validate Tinto’s model, modify it, or create a new model or theory based on it, with varying levels of success (Bernard & Amunden, 1989; Fjortoft, 1995; Kember, Murphy, Siaw, & Yuen, 1991; Pugliese, 1994; Sweet, 1986). Finally, there are a number of studies that employed an experimental design to evaluate a single variable. For example, Frith and Kee (1994) used a control and treatment design to look specifically at the effect of differing communication methods, or Waschull (2001) who examined outcomes related to attrition based on mode of delivery.

Understanding these studies and their numerous constructs is problematic since each study uses different sets of variables and different types of statistical analysis to predict attrition. Given these many different approaches to examining attrition in post-secondary distance education, it is not surprising that the findings in the research have been mixed at best.

A review of the literature also indicated a lack of consensus on how many and what should be considered a valuable predictor variable. Kember (1989) notes, “The attrition process is undoubtedly a complex one, a theory that could fully explain every aspect of the attrition process would contain so many constructs that it would become unwieldy if not unmanageable” (p. 279). Therefore, this study conducted a meta-analysis to identify the overall effect of attrition in distance education, and to investigate possible sources of variation among the predictor variables that may explain the diverse findings within the literature on distance education attrition. This quantitative synthesis investigated following questions:

1. What is the average effect size over distance education attrition studies, and is it different from zero?
2. Is the effect size related to study characteristics, and if so, do they have a positive or negative effect on attrition in distance education?
3. Were effect sizes influenced differentially by methodological characteristics?
4. Were effect sizes influenced differentially by substantive characteristics?
To answer these questions, this study synthesized peer-reviewed thirty research studies on attrition in distance education. The study employed the research method of meta-analysis based on the works of Glass, McGaw and Smith (1981), Orwin (1983), Hedges and Olkin (1985), Mullen (1989), Rosenthal (1979; 1991), and Lipsey and Wilson (2001).  

Review of Literature

The review of the literature began with an examination 20 years of quantitative studies to analyze the phenomenon of attrition in post-secondary education, specifically distance education. The review started with Vincent Tinto’s 1975 higher education predictive retention model, which is known to be one of the most extensively cited and the most widely tested models to date (Kember, 1989). Tinto’s model was designed to address traditional four-year university students in a face-to-face arena. However, this model has also been cited in numerous studies (Kember, 1989; Sweet, 1986; Smith, 2001; Taylor et al., 1986) related to distance education and has been used to launch many new and diverse attrition theories, models, and studies. Tinto’s model concluded that a student’s commitment to college, and his or her personal academic goals and background, have a direct impact on their persistence. Tinto claims that based on how well a student integrates into the scholastic and social systems of the institution will be determined whether or not they dropout. In 1983, Pascarella and Chapman’s research on attrition also concluded that a student’s interaction with college life was connected to retention, further supporting Tinto’s claim (Halpin, 1990; Pascarella & Chapman, 1983; Pascarella & Terenzini, 1998; Terenzini & Pascarella; 1980).

In later years, Tinto realized the narrow scope of his model and in his 1982 article entitled, “Limits of theory and practice in student attrition”, he stated that if his earlier model were to be used for nontraditional forms of education such as distance education, then modification would be required. David Kember (1989) did just that by taking Tinto’s model and redesigning it for use with distance education students. Kember illustrated that distance education students were most often part-time and older than those who studied on campus, and for this reason factors other than college life and academic integration weighed more prominently in their decision to drop out. In his research on attrition, Kember developed the Distance Education Student Progress inventory (DESP). With this instrument, he concluded that a number of external variables such as employment and family obligations played a strong role in the attrition of distance education students. Further, Kember pointed out that looking at single variables is of little value and argued that the examination, use of, and integration of multiple variables would enhance the successful prediction of attrition. Kember’s continued research in 1990 concluded that intrinsic motivation was a strong predictor of retention, especially when students perceived their educational experience was significant to their job or personal interests.

Kember’s research was confirmed when Fjortoft (1995) experimented with a model designed to predict adult student attrition in distance education. Fjortoft concluded an adult student was less likely to drop out if he or she expected to gain “tangible career related results” (Fjortoft, 1995, p. 2). Fjortoft identified five variables that could be used to predict attrition among adult learners in a professional distance education program; age, previous college education, intrinsic job satisfaction, attitude towards learning, and perceived benefits of completion.

An alternative model researching the nontraditional student, still based on Tinto’s framework, was Bean’s 1980 Causal Model of Student Attrition. This model investigated the “student’s institutional fit” (Rovai, 2003, p.3) by using the student’s personal characteristics (demographics) and his or her academic backgrounds as variables for determination. Bean argued that students dropped out for the same reasons that employees left their jobs, including factors such as relocation and better opportunity. In 1985, Bean worked with Metzner on a new, more refined model for nontraditional students, which defined four variable sets that could predict attrition: background variables, environmental variables, academic variables, and intent to leave (Bean & Metzner, 1985). Bean and Metzner’s model was one of the first to argue that external variables such as hours of employment, family obligations, and personal finances played a major role in predicting attrition for nontraditional students.

In 1988, Bean’s work was modified by Billings who developed an attrition model centered around four variable sets to predict attrition. Two of the four variable sets closely paralleled Bean’s and Tinto’s academic performance and environment variables. Billings argued that the other two variable sets that predict attrition for student parting in correspondence course are supporting structure and course variables (Billings, 1988). Each study reviewed has its own constructs similar to Billings, sometimes building off someone else’s variable(s), sometimes redefining those same variable(s), and other times just manufacturing their own. For example, Sweet (1986) found that perceived helpfulness of faculty and non-course discussions with instructors were variables that could predict attrition accurately. Pugliese (1994) found that psychological factors such as loneliness, communication apprehension, and locus of control were not valid predictor variables of attrition for distance education students. Pugliese did conclude that distance education “appears to be a social equalizer when it comes to
receiving course credits” (p. 34). Taylor et al. (1986) found that quick turnaround time on correspondence and review of assignments could be positively correlated to retention. Contrary to several models that suggest past education is a significant attrition predictor, Chacon-Duque (1985) concluded that past academic experience and age were not valid predictors, but variables such as quality of course materials, variety of media, and planned student support were exceedingly significant indicators.

From the literature, two distinctions of the status of research on student attrition in distance education were evident. First, there seems to be no variable set(s) that is defined in the same way, nor are there any theories or models that appear to rise above the rest. Tinto’s model does emerge as a basic building block for most other theories and models, including those developed for nontraditional students and for distance education. However, each researcher tends to interpret or modify Tinto’s variable sets in his or her own manner, while others continue to create new and more encompassing variable sets, hence increasing the complexity of attrition predictor variables.

Second, the research seems to be going in many different directions simultaneously while also producing a high number of contradictory reports. There were for example a number of studies that validate the significance of a preceding study but then argue that the past findings need to be altered by either deleting a variable set(s) or by including a new or modified variable set(s). Conversely, immediately after a research study identifies a new variable set(s), it is directly followed-up by another study suggesting an opposite conclusion. This is partially because many studies look at unique populations or use a different way in which to define and calculate attrition. In view of all these variations in the literature on this topic, it would currently be difficult to decide on any type of implementation strategy to prevent attrition in distance education.

Method

Inclusion Criteria

All studies used in this meta-analysis had to meet the following inclusion criteria throughout all stages of the literature search:
1. Studies must incorporate attrition rates or data for post-secondary students partaking in distance education.
2. Studies must have sufficient descriptions of population characteristics.
3. Studies need to have been published in an English-language peer-reviewed journal or English-language dissertations, ensuring that the quality of the study meets research standards in the field.
4. Studies published before 1984 will not be included in order to provide for a more contemporary database.
5. Studies must contain statistical documentation to allow for calculation or estimation of effect size.

Literature Search Methods

The first round of searching consisted of a systematic scan of the following databases: Education Resources Information Center (ERIC), PsycINFO, Education Abstracts, Social Science Abstracts, and Dissertation Abstracts. The computer search strategy used the following keyword search terms: attrition, dropout, non-completer, non-persist, withdrawal, distance, online, distributive, web-based, computer based, and correspondence education and training. This preliminary round of database searches produced 104 articles and 75 dissertation abstracts. Of these only 27 articles and 61 dissertations meet all of the inclusion criteria. Many of those eliminated were qualitative studies or case studies that included no statistical information. A number of others were eliminated because they met most but not all of the inclusion criteria. For instance, some researched secondary school attrition or others used a single group non-experimental design.

Most of the remaining 89 candidates only survived because their abstracts were not specific enough to exclude them without further investigation. After gathering full copies of each study, the field was further reduced to nine articles and twenty dissertations. A second round of inquiry was performed by searching individual journals that were identified through the primary search and finally an ancestral search was completed. These additional searches produced three more dissertations for a total of nine articles and twenty-one dissertations.

Coding

Studies were coded into moderator variables that fell into two categories, substantive and methodological. There were four substantive variables; study focus, institution type, student type, and attrition factors and three methodological variables: statistics reported, article type, and publication year. Each is these was further broken down as outlined in Table 1.
Table 1. - Coding Scheme

<table>
<thead>
<tr>
<th>Substantive</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institution Type</strong></td>
<td></td>
</tr>
<tr>
<td>Traditional 4 year</td>
<td>1.1</td>
</tr>
<tr>
<td>Community/Junior/Tech College</td>
<td>1.2</td>
</tr>
<tr>
<td>Open University</td>
<td>1.3</td>
</tr>
<tr>
<td>Corporate Training and Continuing Education</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Student Type</strong></td>
<td></td>
</tr>
<tr>
<td>Traditional 18-24</td>
<td>2.1</td>
</tr>
<tr>
<td>Graduate/Post Bachelors</td>
<td>2.2</td>
</tr>
<tr>
<td>Professional or Life Long Learner</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Study Focus</strong></td>
<td></td>
</tr>
<tr>
<td>Course Attrition</td>
<td>3.1</td>
</tr>
<tr>
<td>Program Attrition</td>
<td>3.2</td>
</tr>
<tr>
<td><strong>Attrition Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Demographic</td>
<td>4.1</td>
</tr>
<tr>
<td>External</td>
<td>4.2</td>
</tr>
<tr>
<td>Internal</td>
<td>4.3</td>
</tr>
<tr>
<td>Mixed</td>
<td>4.4</td>
</tr>
</tbody>
</table>

| **Methodological**                |       |
| Publication Year                  |       |
| 1984-1994                         | 5.1   |
| 1995-2004                         | 5.2   |
| Source Type                       |       |
| Peer-reviewed Journal             | 6.1   |
| Doctoral Dissertation             | 6.2   |
| Research Method                   |       |
| Mean and Standard Deviations      | 7.1   |
| F, t, r, X²                       | 7.2   |
| Odds ratio/2x2 tables             | 7.3   |
| Mixed                             | 7.4   |

Before beginning the meta-analysis statistical procedure, an inter-rater reliability analysis was performed on the coding scheme. The coding was performed by two independent researchers returning a Kappa score of .6825, falling into the substantial range.

Results

Characteristics of the Studies

Thirty studies on distance education attrition met the criteria for inclusion in this meta-analysis. Twenty-one were dissertations and nine were from peer-reviewed journals. The studies were published from 1989 to 2003, with the median year being 2000. Thirty-nine percent of the studies \( (n=12) \) fell into the early years coding category, those published from 1984 to 1994; the remaining 61 percent \( (n=18) \) were coded as later years, from 1995 to 2003. Sample sizes ranged from a low of 38 to a high of 1504 for an approximate 9769 participants, with a median of 252 participants per study. The majority of studies, 50 percent \( (n=15) \), examined distance education attrition at traditional four-year institutions; 27 percent \( (n=8) \) at community colleges; 17 percent \( (n=5) \) at open universities; and the remaining researched professional development and/or corporate training. Thirty-seven percent of the studies explored only internal attrition variables \( (n=11) \), including such items as assignment turnaround time, course materials, and amounts of faculty interaction. Twenty-seven percent analyzed only demographic attrition variables \( (8) \) such as age, past education, distance from the offering institution. The remaining 36 percent researched variables from all three variable sets (mixed), demographics, internal and external, while no studies focused exclusively on external attrition factors.
Publication bias, the file drawer, and normality

Publication bias was addressed by creating a funnel plot of effect size against their corresponding sample size (Light & Pillemer, 1984) as seen in Figure 1. There were two types of studies used in this meta-analysis, those selected from peer-reviewed published journals, and those from doctoral dissertations. Since the effect size calculated for both the published journal studies and the dissertations are relatively the same (journals $d=0.0609$, dissertations $d=0.0569$), it seems evident that no significant journal bias is present.

Figure 1 – Funnel Plot

To look further for publication bias and to assess normality, a normal quartile plot was created (Figure 2). All of the studies fall within 95 percent confidence interval with the exception of the Hansen dissertation, which had an effect size that was medium to large (.6299), while also having an extremely small variance (.0023). The Hansen study appears to be out of the normal population, which is consistent with the overall effect size results of $d=.059$.

Figure 2 – Normal Quartile Plot
Overall Effect size

Two models are generally used in meta-analysis; the \textit{fixed effects model} and the \textit{random effects model}. The fixed effects model assumes that all of the variability between effect sizes is due to sampling error or the luck of the draw. The random effects model suggests that the variability between effect sizes is due to sampling error plus differences in the population of effects. For example, other random differences between studies may include differences in procedures, settings, methods, and population grouping, all of which go beyond simple subject level sampling error (Lipsey & Wilson, 2001). “Thus the observed variability in sample estimates of effect size is partly due to the variability in the underlying population parameters and partly due to the sampling error of the estimator about the parameter value” (Hedges & Oklin, 1985, p. 191). A more obvious difference between the two models is that the fixed effects model tends in general to show larger confidence intervals as well as a more significant overall effect size, presenting a less conservative approach. Although all of the studies had distance education attrition as their dependent variable, there were more than one hundred different attrition factors, several diverse and unique treatments, and varying types of subject classification and grouping. More importantly, there were several different statistical methods used to calculate effect sizes between and within studies, therefore a random effects model approach was deemed appropriate (Rosenberg et al., 2000).

Using the random effects model, Table 2 shows the results of the meta-analysis. From the 30 studies there were 284 effects calculated ($k=284$). The median for $k$ was four, with a maximum of fifty-eight and a minimum of one. The overall effect size of $d$ is 0.059, which is considered to be a non-significant result as defined by Cohen (1988) and Lipsey (1990). Although the effect size is different from zero, it is not near enough to the .20 that would be considered a small but significant effect size.

Looking closer at the results in Table 2, the lowest effect size appears in the Cordover dissertation with -0.3151, and the highest is the Thompson dissertation at 1.1206, with an overall median effect size of .062, which is extremely close to the overall study $d$ of 0.059. There were eighteen studies showing a positive effect size indicating that the independent variable (demographic, external or internal) could indicate changes in or predict the dependent variable (distance education attrition), while the remaining twelve studies showed the opposite. The overall effect size was positive at $d=0.0590$ with a variance of 0.0808 having a 95 percent confidence level between -0.0397 and 0.1577. A random (pseudo) resampling (999 times) was done to produce a bootstrapped 95% confidence interval of -0.0337 to 0.1517, which is extremely close to the sample’s 95% confidence interval, again reinforcing the normality of the data. A homogeneity analysis produced a $Q$ of 30.1341, $df/29$, with $p$ equal to 0.4073. Since $Q$ was not statistically significant at the .05 level, it can be logically assumed that the data in the sample sufficiently represent the population (homogenous).

The normality of the sample, its homogeneity, and the result of $d=0.059$ gives empirical evidence that there are no attributable variables to identify distance education students who complete and those who attrite. There appears to be no clear pattern in identifying, classifying, or accounting for distance education attrition within the distance education empirical literature. This meta-analysis posed four primary questions. The first asked, “Is there an average effect size across the 30 studies and is it greater than zero?” The answer is yes, there is an effect size greater than zero, but it is not sizeable enough to be considered a significant finding, hence eliminating the need to address the next three research questions.

### Table 2. - Random Model Meta-analysis results

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>n</th>
<th>Effect Size</th>
<th>Var</th>
<th>k</th>
<th>95% Confidence Lower</th>
<th>95% Confidence Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atack</td>
<td>2001</td>
<td>39</td>
<td>0.7233</td>
<td>0.8130</td>
<td>4</td>
<td>-0.8701</td>
<td>2.3167</td>
</tr>
<tr>
<td>Beaty</td>
<td>1994</td>
<td>103</td>
<td>0.0522</td>
<td>0.0100</td>
<td>1</td>
<td>0.0326</td>
<td>0.0718</td>
</tr>
<tr>
<td>Bernard &amp; Amunden</td>
<td>1989</td>
<td>361</td>
<td>-0.1337</td>
<td>0.0249</td>
<td>16</td>
<td>-0.1825</td>
<td>-0.0849</td>
</tr>
<tr>
<td>Bourke</td>
<td>1997</td>
<td>239</td>
<td>-0.2561</td>
<td>0.1958</td>
<td>2</td>
<td>-0.6399</td>
<td>0.1277</td>
</tr>
<tr>
<td>Caldwell</td>
<td>2003</td>
<td>126</td>
<td>0.1593</td>
<td>0.0081</td>
<td>2</td>
<td>0.1434</td>
<td>0.1752</td>
</tr>
<tr>
<td>Cordover</td>
<td>1996</td>
<td>89</td>
<td>-0.3151</td>
<td>0.0116</td>
<td>1</td>
<td>-0.3378</td>
<td>-0.2924</td>
</tr>
<tr>
<td>Crabtree</td>
<td>2000</td>
<td>1504</td>
<td>0.1295</td>
<td>0.0007</td>
<td>1</td>
<td>0.1281</td>
<td>0.1309</td>
</tr>
<tr>
<td>Diaz</td>
<td>2000</td>
<td>91</td>
<td>-0.9392</td>
<td>0.0665</td>
<td>15</td>
<td>-0.2235</td>
<td>0.0371</td>
</tr>
<tr>
<td>DiBisceglie</td>
<td>2002</td>
<td>444</td>
<td>0.2271</td>
<td>0.0023</td>
<td>8</td>
<td>0.2226</td>
<td>0.2316</td>
</tr>
<tr>
<td>Dille &amp; Mezack</td>
<td>1991</td>
<td>151</td>
<td>-0.1882</td>
<td>0.0335</td>
<td>3</td>
<td>-0.2539</td>
<td>-0.1225</td>
</tr>
<tr>
<td>Frith &amp; Kee</td>
<td>1994</td>
<td>174</td>
<td>0.2230</td>
<td>0.0932</td>
<td>1</td>
<td>0.0403</td>
<td>0.4057</td>
</tr>
</tbody>
</table>

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Discussion

The present synthesis summarizes research examining the relationship between distance education completers and non-completers. As seen throughout the literature review, there are many models, theories, and studies that suggest a specific variable or sets of variables that can account for or predict attrition in post-secondary distance education, but the outcome of this meta-analysis suggests the opposite. The overall result of an effect size of .059 indicates that there are no factor(s) strong enough to identify significant differences between distance education completers and non-completers. The result of this study supports Rovai’s conclusion that, “There is no simple formula that ensures student persistence” (Rovai, 2003, p.12). Further, indifferent to the claims of a number of other researchers, this study suggests there is no single variable or set of variables that can clearly be attributed to the prediction of distance education attrition.

An important finding of the study that warrants discussion is the quality of the studies in the distance education literature, since this is of prime concern for all meta-analyses. It would have been beneficial to incorporate a greater number of studies in this meta-analysis, but unfortunately, there were a large majority of studies in the research base that were methodologically flawed in one way or another. As a whole, the studies seemed to lack methodological rigor, with many studies using non-equivalent comparison groups rather than true random assignment. Some studies were flawed by simple errors such as number reversal in tables or text, groups transposed, or contingency tables missing strategic information. There were also several studies where the n was reported inconsistently within the body of the article with no given explanation. Due to the poor quality of research in this area, a sizeable number of studies that initially appeared to meet the selection criteria were eventually eliminated.

This study’s findings support Phipps and Merisotis (1999) findings that were prepared for the American Federation of Teachers and the National Education Association suggesting “there is striking evidence of the fact that there is relative paucity of true, original research dedicated to explain or predict phenomena related to distance education” (p.13). Further, they suggested, “merely being published in a journal or a book, for example, does not guarantee the quality of the study or that it was reported accurately” (p.19). This meta-analysis can confirm there was no difference between peer-reviewed journal articles and doctoral dissertations, both producing low but equivalent effect sizes ($d=.06$ and $d=.057$, respectively). This suggests that there may be no difference in quality, at least between these two types of research reports.

Further, there was no difference between the two sets of publication years, 1984-1994, and 1995-2004. The synthesis of research covered a twenty-year span in which the delivery mechanisms for distance education have
changed considerably, as have the numbers and the characteristics of today’s distance learners. The speed at which educational technology is changing and the ever-increasing percentages of the population partaking in such, leads to the view that the results of this synthesis may be somewhat historical and somewhat less generalizable in the distance education arena of today. Despite these obvious differences in technology for service delivery, this study showed only a minute difference between those studies originating between 1984 to 1994 ($n=12$, $d=0.067$) and those from 1995 to 2004 ($n=18$, $d=0.059$). This would indicate that technology does not play a significant role in distance education attrition, that it lies in other areas.

Research Implications

As identified in the findings of this synthesis, there is a need for improved research methods in distance education research. Phipps and Merisotis (1999) rejected the findings in Thomas Russell’s 1999 The No Significant Difference Phenomenon because of the poor quality of distance education research. They criticized many of the articles, especially those pertaining to original research, for not controlling for extraneous variables, not using random assignment, and using questionable instruments that lacked validity and reliability for data collection. This meta-analysis seems to validate those criticisms, as seen by the small number of usable studies. Of the 88 studies that initially appeared to meet the selection criteria from the primary search, only 31 percent ($n=27$) survived the screening process.

The quality of educational research has recently become a hot topic among legislators as well as academics. Recently enacted federal legislation, including the No Child Left Behind Act (2001) and the Education Science Reform Act (2002) has raised demands for “scientifically based” educational research. There is an intense debate on what constitutes a scientific base for educational research (Eisenhart & Towne, 2003), but its ultimate goal seems to be to produce more accurate studies based on methodologically sound research design, solid measurement, and appropriate statistical analyses.

Another compelling implication of this meta-analysis is that it supports Kember’s (1990) notion that “dropping-out from distance education is a complex phenomenon” (p. 11). The true complexity with attrition is visible in how each study used in this synthesis chose to define or not to define the term attrition itself. Ten of the studies that were included gave no clear definition of attrition while others made in-depth statements. Their descriptions, explanations, and classifications were extremely diverse in nature. For instance, Loo (2003) used a somewhat detailed explanation of attrition; “students who have registered in an online course, but did not meet the course requirements of a passing grade, and did not withdraw by the official drop date or received an “F” or “IF” for incomplete fail were considered drop outs” (p. 27). Conversely, Dille and Mezack (1991) merely stated that attrition is the number of withdrawals from the course during the semester. An even more simplistic definition came from Ostman and Wagner (1987) who narrated, “respondents decided for themselves whether or not they were dropouts” (p. 53). Clearly, these researchers have different conceptual ideas on how attrition should be defined and operationalized. Accordingly, a given student could be labeled a dropout in one study, and as a persister in another. These circumstances make it enormously difficult to find meaning in what is in many other ways a particularly diverse literature. It appears that achieving consensus regarding the definition to the term attrition would help clarify some of the obscurity found among and between attrition studies. As far back as 1978, Pantages and Creedon noted, “ideally, studies of attrition should incorporate…a definitive unambiguous operational definition of dropout” (p.56). This is not yet the case, since studies produced in the past five years still have the limitation of not producing or using a single clear definition of attrition.

Recommendations

The most noteworthy recommendation as a result of this study is the need for longitudinal studies. Almost all of the studies reviewed were a quick snapshot in time, with the largest percentage of studies researching attrition over only one or two semesters. This again goes back to the quality of research in the area. It would be expected that longitudinal studies might be missing from the doctoral dissertation group, but more should be found in articles published in peer-reviewed journals. The need for longitudinal studies is evident in that all educational research is unique and each institution, classroom, or student may vary significantly from place to place, hence the accumulation of research evidence over time and across studies (meta-analysis) may be the best way to produce consistent and accurate findings (Waxman, Lin & Micko, 2003).

There are still many unanswered questions about distance education attrition, but research can play a key role in finding answers and solutions. The result of this research recommends not only the need for an accepted definition of distance education attrition, but the need for research studies that employ better measurement tools,
more pre-tested data collection instruments, and more detailed statistical analysis. Research studies in education need to focus on better design and more control for extraneous variables, so that the justification for study findings is stronger and defensible.

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