

Received: 19 May 2024, Accepted: 25 July 2024
DOI: <https://doi.org/10.33282/rr.vx9i2.65>

Assessing the Alignment: Content Analysis of Gap Between Intended and Attained Curriculum for Critical Thinking in B.S. Educational Psychology

Ali Zaman^{*}; Dr. Samreen Mehmood^{**}; Dr. Muhammad Idris^{***}

Abstract:

In order to ensure optimal student growth, it is imperative that intended and attained curricula in B.S. Educational Psychology programs be aligned to cultivate critical thinking abilities. This study used content analysis to evaluate how well the program achieves its goals of encouraging critical thinking. Using a sample of 10 students from Abdul Wali Khan University Mardan, Pakistan, the study focuses on the discrepancy between expected outcomes and actual practice. Ten critical thinking skills were discovered and tested using interpretive content analysis adopting deductive & thematic coding and semi-structured interviews. Findings reveal a strong emphasis on fundamental skills such as testing, developing, formulating, creating, and evaluating, while skills like elaborating, differentiating, and criticizing show less frequent integration. The inter-rater reliability was found to be perfect, indicating high consistency in skill assessment. The results suggest that while the curriculum successfully supports several critical thinking skills, there are significant gaps in other areas. Recommendations include curriculum revision to balance the inclusion of all critical thinking skills, regular reviews, and enhanced professional development for educators. This study provides valuable insights for improving curriculum design and instructional strategies to better support student learning outcomes in educational psychology. The findings reveal that core competencies including testing, developing, formulating, generating, and assessing are highly valued, although elaborating, differentiating, and critiquing demonstrate less frequent integration. Perfect inter-rater reliability was discovered as $K=1$, demonstrating excellent consistency in skill evaluation. The conclusion imply that although the curriculum effectively fosters several critical thinking abilities, there are notable shortcomings in other areas of the content. Recommendations include regular reviews, improved professional development for teachers, and curriculum reform that strikes a balance in including all critical thinking abilities. This study offers insightful information that can be used to enhance instructional practices and curriculum design in educational psychology to better promote student learning outcomes.

Key Words: *B.S. Educational Psychology, Alignment, Curriculum, Content Analysis, Gaps, Critical Thinking.*

Introduction:

The inclusion of critical thinking abilities in curricula has grown more and more important in the evolving landscape of education for student achievement. These abilities are necessary to help students interpret, assess, and synthesize data-all critical

skills in the discipline of educational psychology (Facione, 2023). To support student growth, effective educational programs must not only emphasize the value of these abilities but also make sure that the curriculum is in line with these goals (Paul & Elder, 2020). According to Kruppendorff (2020), content analysis is a scientifically sound methodology that enables a thorough examination of curriculum content and a thorough assessment of the degree to which critical thinking abilities are applied. A theoretical framework for comprehending how skills in critical thinking can be successfully integrated and taught is provided by educational psychology. This framework is necessary for determining whether the curriculum facilitates the development of these key skills and achieves its stated goals (Woolfolk, 2023). Understanding the meaning and significance of critical thinking abilities is essential since they support both academic success and efficient teaching methods (Ennis, 2021). The goal of this research is to determine the substantial implications for developing courses and teaching methods. Teachers and policymakers can make well-informed decisions to improve the efficacy of educational programs and better support student learning outcomes by identifying gaps and inconsistencies in the curriculum. Through the identification of potential gaps for improving the inclusion of critical thinking skills, this study makes a valuable contribution to the field of curriculum evaluation for educational psychology.

Literature Review:

The systematic method of examining textual material to find themes, patterns, and frequencies is called content analysis (Amy Luo, 2023). This method is essential for assessing instructional materials and curricula to make sure they adhere to standards and goals for education (Mayring, 2022). Researchers can evaluate how well courses match planned learning outcomes including the incorporation of critical thinking skills by using content analysis. The study of educational psychology focuses on how people acquire knowledge and grow cognitively. It highlights the importance of critical thinking in the classroom, which includes analytical, evaluative, and problem-solving abilities (Schunk, 2023). Critical thinking is essential for both academic achievement and lifetime learning because it enables students to successfully approach challenges and make well-informed decisions (McPeck, 2021). The discipline emphasizes how crucial it is to incorporate these abilities into curriculum in order to improve students' cognitive development and get them ready for challenging real-world situations. It has been shown through recent content analysis of B.S. Educational Psychology program curriculum that high-frequency critical thinking skills like concept development and evaluation are regularly included. This result validates the curriculum's emphasis on advanced cognitive skills (Choi & Lee, 2023). Other critical thinking abilities, on the other hand, vary widely, suggesting possible weaknesses and opportunities for development (Garrison & Akyol, 2023). The necessity for a more equitable approach to incorporating all critical thinking abilities into the curriculum is highlighted by this variety.

The combination of educational psychology and content analysis provides a solid foundation for assessing how well courses foster the development of critical thinking abilities. This method directs efforts to close gaps and improve educational outcomes by highlighting the advantages and disadvantages of current curricula (Facione, 2023; Schunk, 2023).

Statement of the Problem:

There is a lack of evidence supporting the alignment of the expected and attained critical thinking skill curriculum in B.S. Educational Psychology programs. The purpose of this study is to determine if there are any differences between the

curriculum's stated outcomes and actual practice. Finding this kind of misalignment is essential to enhancing curriculum design and guaranteeing that pupils get the essential critical thinking abilities.

Research Objectives:

1. To assess how well students enrolled in the B.S. Educational Psychology program achieve critical thinking skills in comparison to the anticipated curricular objectives.
2. To identify and investigate variations in the skills in critical thinking that students exhibit in their coursework and those that are outlined in the curriculum.
3. To find out how curriculum variation affects student performance and results concerning critical thinking skills.

Research Questions:

1. What degree of alignment exists between the desired and actual critical thinking skills covered in the B.S. Educational Psychology curriculum?
2. Which variations are there between the curricular outline for critical thinking skills and observed student performance?
3. What is the impact of varying critical thinking skill implementation across standards on student results in the program of B.S. Psychology in Education?

Significance of the Study:

The results of this study will inform future research, provide guidance for curriculum revisions, and provide ideas for policy improvements, all of which will contribute to more comprehensive and effective education in the field. This study is essential for improving the development of the curriculum in B.S. Psychology in Education programs by identifying deficiencies between planned and obtained critical thinking skills. To ensure that pupils develop vital critical thinking abilities, educational quality must be improved by addressing this misalignment.

Research Methodology

The study was qualitative by type as the critical thinking skills were observed and sought out from the lived experiences of the students and it was descriptive in nature.

Population, Sample & Sampling Technique:

All 28 BS Education students participating in the psychology of education course at Abdul Wali Khan University Mardan Pakistan comprising 21 Males & 7 Females were the study's target group, out of which 08 Males and 02 Females were selected as study-sample through non-probability purposive sampling technique (Peters, 2021).

Data Collection Tool & Procedure:

According to Jonathan et, al. (2007), Semi-Structured interview is the best option to capture and explore the lived experiences of the participants from their own point of view. Therefore the researcher used the semi-structured interview technique for collecting the data in audio-recording form and then transcribed it in textual form. It was then analyzed through IPA and the themes were produced from which 10 critical thinking skills were extracted in light of stage theory framework of CTS and last three stages of Bloom's Taxonomy and tabulated . These critical thinking skills were then coded for interpretive content analysis (ICA).

Validity & Reliability of Instrument:

The designed tool was validated through settings with supervisor, pilot study and certified through experts judgement. The Inter-rater reliability (IRR) was find out through Cohen's Kappa which was $k=1$ showing highest IRR.

Data Analysis and Interpretation:

For ICA the Pilot Coding was carried out for the CTS of 03 students to determine whether the corresponding themes' coding scheme was appropriate. It demonstrated the two raters' full agreement because the value of k was 1; as a result, IRR and consistency were present, and the pilot research determined that the coding system was accurate.

Therefore based on the results of pilot coding the frequency table of 10 CTS for ten students was designed by giving codes to the respective CTS and presented as Table 1.

Table of Frequencies with Codes.

Code	Critical Thinking Skill	S*1	S2	S3	S4	S5	S6	S7	S8	S9	S10	Σf
1	Conceive	E	E	E	E	E	E	N	E	E	E	9
2	Re-frame	E	E	E	E	E	N	E	N	E	E	8
3	Illustrate	E	E	E	E	E	E	N	E	E	E	9
4	Summarize	E	E	E	E	E	N	N	N	E	E	7
5	Classify	E	N	E	E	E	N	N	N	E	N	5
6	Discriminate	E	N	E	E	E	N	N	N	E	N	5
7	Examine	E	E	E	N	N	N	N	N	E	N	4
8	Assess	E	E	E	N	N	E	N	N	E	N	5
9	Compare	E	E	E	N	E	E	E	E	E	N	8
10	Justify	E	E	E	E	N	E	E	E	E	E	9

Table:1 representing CTS frequencies with codes assigned. *S means Student

Coding Scheme: Codes are Numbered to represent various CTS. Here 1 is assigned to Conceive i.e. Code 1=Conceive, so Code 2=Re-frame, & Code 3= Illustrate and so on.

Select and Prepare the Data:

Step 1: Data Selection

Reference to the table 1, the data is taken in the form of 10 CTS (like Re-frame, assess, justify etc) having various ratings for 10 prospective teachers in terms of E or N where E stands for critical thinking skill exists and N for the skill not exist.

Data Table: Data table already provided as table 1

Step 2: Prepare the Data

The occurrences for every code (E to "Exists" and N to "Not Exists") among the 10 distinct student requirements for each skill were determined to produce the data.

Frequency Calculation: The skill-wise calculation was determined as Skill_1 which is Conceive has E=9 and N=1 expressing existing frequency for Conceive is 9 and like wise which can be shown in the table below for first five.

Step 3: Data Summary in a Frequency Table

The initial 5 CTS frequency table for 10 students is as:

Code	Skill	E	N
1	Conceive	9	1
2	Re-frame	8	2
3	Illustrate	9	1
4	Summarize	7	3
5	Classify	5	5

Table 2: Skill Wise Calculation

Identification of Patterns and Themes:

1. Recognition of Patterns:

Regularities or trends seen in the data/themes are called patterns. To find recurring themes in the study the researcher:

A. Examined Frequencies in Different Standards: Researcher assessed how frequently each critical thinking skill such as "conceive," "re-frame," and "illustrate" occurs and how often it appears (E for exists, and N for does not) about certain student requirements.

B. Examined Variability: The frequency with which each skill appears or is absent across the various standards was determined. For instance, a high prevalence pattern is indicated if "Conceive" is constantly listed as "Exists" in the majority of criteria.

C. Made Comparative Analysis: The patterns for various sets of skills were investigated. If "Illustrate" and "Summarize" for example, appear as "Exists" more often but "Classify," shows lots of variations. This may indicate that some abilities in the curriculum have been more often incorporated than others.

D. Examined Gaps and Consistencies: It was determined which skills were consistently existed or absent about each criterion. Gaps could be a sign of deficiencies in the curriculum or potential areas for improvement.

2. Identification of Themes: Themes are more general ideas or classifications that result from the data's patterns. To recognize themes, researcher:

1). Determined Group-Related Skills: The researcher compared and contrasts the skills of critical thinking. For instance, skills with high frequency, such as "Conceive," "Illustrate," and "Re-frame," may be combined under the more general heading of "Creative Thinking."

2). Determined Main Themes: Researcher also determined the main themes based on the patterns. For example:

1. High Frequency Skills: The curriculum places a great focus on codes: 1, 3, and 10 (Conceive, Illustrate & Justify), which are frequently seen.

2. Moderate Frequency Skills: While there is a significant focus, some diversity in Codes: 2, 4 & 9 (Re-frame, Summarize and Compare).

3. Low-Frequency Skills: The lower frequencies of codes: 5, 6, 7 and 8 (Classify, Discriminate, Examine & Assess) suggest that there may be less attention or having gaps in the information.

Check for Inter-Rater Reliability (IRR):

IRR refers to the issue of consistency applied by the rating system. Numerous statistical techniques used for IRR assessment in which kappa is one of the best to use. When two examiners have poor inter-rater reliability ratings, there is little agreement between them but if the rating between them is high then IRR shows perfect agreement (Anastasi & Urbina, 1997). The researcher also check the agreement from two independent raters for initial 5 CTS for 10 selected prospective teachers.

Independent Rater 1:

Code	Skill	St1	St2	St3	St4	St5	St6	St7	St8	St9	St10
1.	Conceive	1	1	1	1	1	1	2	1	1	1
2.	Re-frame	1	1	1	1	1	2	1	2	1	1
3.	Illustrate	1	1	1	1	1	1	2	1	1	1
4.	Summarize	1	1	1	1	1	2	2	2	1	1
5.	Classify	1	2	1	1	1	2	2	2	1	2

Table.5: Rater 1 ratings. 1= Exist (E) and 2= Not Exist (N), St represent Student

Independent Rater 2:

Code	Skill	Sd1	Sd2	Sd3	Sd4	Sd5	Sd6	Sd7	Sd8	Sd9	Sd10
1.	Conceive	1	1	1	1	1	1	2	1	1	1
2.	Re-frame	1	1	1	1	1	2	1	2	1	1
3.	Illustrate	1	1	1	1	1	1	2	1	1	1
4.	Summarize	1	1	1	1	1	2	2	2	1	1
5.	Classify	1	2	1	1	1	2	2	2	1	2

Table 6: Rater 2 ratings.

2. Calculate the Agreement

Compute the agreement for each skill via comparison of the codes provided by the two testers for each student.

Skill 1: “Conceive” Create the Student Rater 1 and Rater 2 Agreement

Student	Rater 1	Rater 2	Agreement
Sd 1	E	E	Yes
Sd 2	E	E	Yes
Sd 3	E	E	Yes
Sd 4	E	E	Yes
Sd 5	E	E	Yes
Sd 6	E	E	Yes
Sd 7	N	N	Yes
Sd 8	E	E	Yes

Student	Rater 1	Rater 2	Agreement
Sd 9	E	E	Yes
Sd 10	E	E	Yes

Table: 7 Agreement Comparison for “conceive”.

Formula for Raters Agreement = $(\Sigma \text{Agreement Rater 1} / \Sigma \text{Agreement Rater 2}) * 100\%$

Consent for "Conceive": = $(10/10) * 100\% = 1 * 100 = 100\%$

Skill 2: Re-frame

Student	Rater 1	Rater 2	Agreement
St 1	E	E	Yes
St 2	E	E	Yes
St 3	E	E	Yes
St 4	E	E	Yes
St 5	E	E	Yes
St 6	N	N	Yes
St 7	E	E	Yes
St 8	N	N	Yes
St 9	E	E	Yes
St 10	E	E	Yes

Table. 8: Agreement comparison for “Re-frame”
 "Re-frame" agreement: $10/10 = 100\%$

Skill 3: Illustrate

Student	Rater 1	Rater 2	Agreement
Std1	E	E	Yes
Std2	E	E	Yes
Std3	E	E	Yes
Std4	E	E	Yes
Std5	E	E	Yes
Std6	E	E	Yes
Std7	N	N	Yes
Std8	E	E	Yes
Std9	E	E	Yes
Std10	E	E	Yes

Table 9: Comparison for “Illustrate”

Agreement for "Illustrate": $10/10 = 100\%$

Skill 4: Summarize

Student	Rater 1	Rater 2	Agreement
Sd1	E	E	Yes
Sd2	E	E	Yes
Sd3	E	E	Yes
Sd4	E	E	Yes
Sd5	E	E	Yes
Sd6	N	N	Yes
Sd7	N	N	Yes
Sd8	N	N	Yes
Sd9	E	E	Yes
Sd10	E	E	Yes

Table. 10: Comparison for “Summarize”

Agreement for "Summarize": 10/10 = 100%

Skill 5: Classify

Student	Rater 1	Rater 2	Agreement
St1	E	E	Yes
St2	N	N	Yes
St3	E	E	Yes
St4	E	E	Yes
St5	E	E	Yes
St6	N	N	Yes
St7	N	N	Yes
St8	N	N	Yes
St9	E	E	Yes
St10	N	N	Yes

Table: 11. Comparison of agreements for “Classify”

Agreement for "Classify": 10/10 = 100%

3. Summarizing Results

Results of Inter-rater Reliability for the First Five Skills:

Code	Skill	Agreement Percentage	Agreement
1	Conceive	10/10	100%
2	Re-frame	10/10	100%
3	Illustrate	10/10	100%

Code	Skill	Agreement	Percentage Agreement
4	Summarize	10/10	100%
5	Classify	10/10	100%

Tale: 12: Percent-wise Agreement Summary of both raters.

There was complete agreement on all five critical thinking skills between the two raters, suggesting that these skills have a high degree of inter-rater reliability.

Calculating the Agreement through Cohen’s Kappa Formula (k):

Calculation Step-by-Step:

1. Create the Confusion Matrix:

Given that raters produced identical findings, the confusion matrix will appear like this:

	Rater 2: E	Rater 1: N	Row Totals
Rater 1: E	38 (a)	0 (b)	38
Rater 1:N	0 (c.)	12 (d)	12
Column Totals	38	12	50 (n)

Table. 13: Matrix showing raters total agreements for exists and does not-exists using table 5 & 6.

2.Calculation of P_o (Observed Agreement): P_o is the proportion of cases where the raters agreed:

$$P_o = a+d/n = 38+12/50 = 50/50 = 1 \text{ implies } P_o = 1$$

3. Calculating P_e (Expected Agreement)

$$P_e = ((a+b) (a+c) / n^2) + ((c+d) (b+d) / n^2) => P_e = (38+0) (38+0) / 50^2 + (0+12) (0+12) / 50^2 \quad P_e = 0.6352$$

4. Find k

K equals to agreement observed (P_o) – agreement that is expected (P_e) / One - P_e

$$=> K = 1-.6352 / 1- 0.6352 = 0.3648 / 0.3648 \text{ implies } K = 1$$

For the provided data, Cohen's kappa is 1, means that the two raters have a perfect agreement.

Interpretation of Analysis:

According to analysis, the B.S. program in Educational Psychology places a strong emphasis on basic critical thinking abilities including "Conceive", "Illustrate" and "Justify" all of which are found in most standards. Although they do not always occur, skills like "Re-frame", “Summarize” and “Compare” are also common. Less focus is, however, given to abilities like "Classify", "Discriminate", "Examine" & “Assess” suggesting possible curricular deficiencies. The consistency in evaluating these talents is confirmed by the 100% inter-rater reliability. It is advised that the less commonly taught skills be addressed in order to improve the curriculum and guarantee a more balanced development of critical thinking skills. In a nutshell, the curriculum shows its strengths in high-frequency areas while lower frequency skills, on the other hand, indicate potential gaps or areas that require additional focus.

Findings:

The analysis's results show ten students' frequencies of using different critical thinking abilities. The primary observations are condensed into the following findings: Illustrations of these skills include Conceive (99%), Illustrate (99%) & Justify (99%), (Table1). The incorporation of skills such as Reframe (88%), Compare (88%) & Summarize (77%) varies, though, indicating uneven adoption (Table 1). The fact that

skills like Classify (55%), Discriminate (55%), Assess (55%) & Examine (44%) are not as often covered (Table1) suggests that there are potential curriculum gaps. It further shows clear differences between the aimed and achieved critical thinking skills that leads to affect the students performance and outcomes in terms of CTS.

The whole process of inter-rater reliability, which was further tested by Cohen's Kappa = 1 demonstrating full agreement between raters' judgments, confirms the consistent nature of the skill assessment (Table 13).

Conclusion:

Based on findings the conclusion indicates that some critical thinking skills, including Conceive, Illustrate and Justify which demonstrate high frequency and consistency across standards, are strongly aligned with the B.S. Educational Psychology program. But abilities like Classify, Discriminate, Examine and Assess however, show significant gaps, suggesting that these domains are neglected. This shows that although some critical thinking skills are successfully fostered by the curriculum, it falls short of providing a thorough method for developing all required capabilities. By filling in these gaps, the curriculum may become more effective and balanced, better-prepared students for a wider range of critical thinking challenges.

Results and Discussion:

The findings and conclusions providing the results that critical thinking skills are varied focused through the curriculum of educational psychology due to which gaps are generated that needs to refocus the desired contents. According to alignment with Choi and Lee (2021) and Facione (2015), the highly recurrent skills like Conceive, Illustrate and Justify are constantly prioritized throughout standards. The results of Garrison and Akyol (2013) and Paul and Elder (2006) on curriculum discrepancies and barriers to critical thinking are reflected in the fact that low-frequency skills like Classify, Discriminate, Examine and Assess reveal gaps.

Recommendations:

- 1. Curriculum Revision:** It is recommended to update the curriculum to include an even incorporation of all critical thinking abilities. Make sure that the abilities that are now being under emphasized are included in all standards to a sufficient degree.
- 2. Address Certain Gaps:** Determine and close any areas where critical thinking abilities aren't as often taught. Make certain that the curriculum gives pupils the chance to hone a wide variety of critical thinking skills.
- 3. Regular Reviews:** Put in place a procedure for routine curriculum revisions and reviews. For the curriculum to remain successful and relevant, it should be in line with best practices and changing educational standards.
- 4. Professional Development:** Make sure instructors have access to continuous professional development. To improve instructional procedures and student learning results, concentrate on efficient methods for imparting and evaluating a broad range of critical thinking abilities.

References:

- Choi, H., & Lee, S. (2021). *Integrating Critical Thinking Skills into Curriculum: A Review of Best Practices*. *Journal of Educational Research and Practice*, 11(1), 45-60.
<https://doi.org/10.1016/j.jedures.2021.01.004>
- Choi, H., & Lee, Y. (2023). Content Analysis in Educational Research: A Systematic Review. *Educational Research Review*, 18(3), 145-159.
- Ennis, R. H. (2018). *The Nature of Critical Thinking: An Outline of Critical Thinking Dispositions and Abilities*. Cambridge University Press.

- Ennis, R. H. (2021). *Critical thinking across the curriculum: A brief edition of critical thinking*. Prentice Hall.
- Facione, P. A. (2015). *Critical Thinking: What It Is and Why It Counts*. Insight Assessment. Retrieved from <https://www.insightassessment.com/Content/Research/critical-thinking-what-it-is-and-why-it-counts>
- Facione, P. A. (2023). *Critical thinking: What it is and why it counts*. Measured Reasons LLC.
- Garrison, D. R., & Akyol, Z. (2013). *The Community of Inquiry Framework: A Review of the Literature*. *Internet and Higher Education*, 18, 20-32.
<https://doi.org/10.1016/j.iheduc.2012.09.003>
- Garrison, D. R., & Akyol, Z. (2023). The Community of Inquiry Framework: A Review of Research. *The Internet and Higher Education*, 19(2), 60-73.
- Jonathan, A., Smith, & Osborn, M. (2007). Interpretative Phenomenological Research, *Journal of education, Sage Publication*, retrieved from, https://med-fom-familymed-research.sites.olt.ubc.ca/files/2012/03/IPA_Smith_Osborne21632.pdf
- Krippendorff, K. (2020). *Content analysis: An introduction to its methodology*. Sage Publications.
- Luo, A. (2023, June 22). *Content Analysis | Guide, Methods & Examples*. Scribbr. Retrieved July 22, 2024, from <https://www.scribbr.com/methodology/content-analysis/>
- Mayring, P. (2022). *Qualitative Content Analysis: Theoretical Foundation, Basic Procedures, and Software Solution*. Social Science Open Access Repository.
- McPeck, J. E. (2021). *Teaching Critical Thinking: Dialogue and Dialectic*. Routledge.
- Paul, R., & Elder, L. (2006). *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*. Pearson.
- Paul, R., & Elder, L. (2020). *Critical thinking: Tools for taking charge of your learning and your life*. Pearson Education.
- Peters, B. (2021). Purposive sampling in qualitative research: Insights and applications. *Journal of Qualitative Research*, 15(3), 45-60.
<https://doi.org/10.1234/qrij.v15i3.2021>
- Schunk, D. H. (2023). *Learning Theories: An Educational Perspective* (8th ed.). Pearson.
- Woolfolk, A. (2023). *Educational psychology* (14th ed.). Pearson Education.

1. * PhD Scholar, Abdul Wali Khan University Mardan, KPK, Pakistan. Email: alinsr1944@gmail.com
2. **Assistant Professor, Abdul Wali Khan University Mardan, KPK, Pakistan. Email: samreen@awkum.edu.pk
3. *** Associate Professor, Abdul Wali Khan University Mardan, KPK, Pakistan. Email: midrees@awkum.edu.pk