Analysis of Artifacts aligned to Marshall's Baccalaureate Degree Profile (BDP)

Academic Year 2022 – 2023

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Executive Summary

Background

Recommendations from the 2022 Assessment Team

The 2022 Summer Assessment Team made the following recommendations:

1. That we follow-up on the recommendation from the 2021 Summer Assessment Team that we work with the Center for Teaching and Learning to form an interdisciplinary committee to review, and consider modifications to, our existing Baccalaureate Degree Profile (BDP) outcomes to include, *Creative Thinking*, *Ethical & Civic Thinking*, and *Intercultural Thinking*. *Creative* Thinking had the weakest performance of the outcomes assessed in summer 2021, and these results mirrored those found for student performance on *Creative Thinking* in summers 2018 and 2017. The Summer Assessment Team has noted that, although we think it is important to have a rubric that works for all disciplines, our earlier efforts to do this may have resulted in a rubric that does not include appropriate evaluation criteria for creative productions, such as those developed by students in the creative arts (e.g., visual art and music). One member of the team suggested that we modify the outcome to include *creative production* and *creative problem-solving*. This recommendation has been on hold; however, the provost has indicated that we need to complete a comprehensive evaluation of the core curriculum in academic year 2023-2024.

2. That we follow-up on the recommendation from the 2021 Summer Assessment Team that the Office of Assessment and Quality Initiatives complete an analysis of the alignment between undergraduate degree program outcomes and those of the BDP. Since programs have made these alignments by BDP trait, this analysis will help us to identify to which outcomes/traits our degree programs align most often. This recommendation has not been completed; however, we will endeavor to make this part of our evaluation of the core curriculum.
3. That, following completion of point 2, we start the process of determining if modifications should be considered for outcomes of the BDP not mentioned in point 1. Please note comments on recommendations 1 and 2.
4. That the Office of Assessment and Quality Initiatives contact deans, chairs, and each instructor teaching a course with a multicultural or international designation regarding the need to align at least one course assignment with the appropriate BDP outcomes in Blackboard and require students to submit their assignment aligned artifacts to the assignment module in Blackboard. We continue to work toward this goal.
5. That the Office of Assessment and Quality Initiatives continue to provide and distribute shorter reports in more digestible formats. We recommend that these reports be disseminated campus-wide through the Assessment Newsletter. We continue to work toward this goal.
6. That we consider adding a section to each five-year program review that asks each program to report the number of courses they teach with International and Multicultural designations that have assignments aligned to the appropriate Baccalaureate Degree Profile outcomes in Blackboard with uploaded artifacts for university-wide assessment. This recommendation will be implemented for programs that complete reviews in fall 2023.

Procedures for 2023 Assessment

General Procedures

In May 2023 we evaluated student artifacts produced in response to course assignments aligned to *Information Literacy*, *Integrative Thinking*, and *Metacognitive Thinking*. A group of seven faculty representing several academic colleges from across the university evaluated a sample of these artifacts using rubrics adapted from Marshall's Baccalaureate Degree Profile (BDP) outcomes. These rubrics are included in the supporting documentation. Our sample initially consisted of 336 artifacts, 112 per outcome.

Prior to beginning our assessment, we spent a day reviewing most assignments aligned to the three BDP outcomes assessed this year to determine if there were assignments that either did not align to the outcome in question or did not align to one or more of its traits. Assignments that reviewers agreed did not align to the outcome were removed from the sample and reviewers were instructed to rate an artifact as "not applicable" (N/A) for Trait 3 (assumptions and biases) of *Information Literacy* and for Trait 3 (connections to experience) of *Integrative Thinking* if they did not see evidence of these traits addressed in the artifact. For all other outcome traits, assessors were instructed to use scores of N/A only if the faculty member who created the assignment specifically gave instructions that the trait was not included in the assignment. The following chart provides the number of artifacts that received scores for each outcome trait.

Outcome	Trait (MU rubric)	Total Assignments Aligned	Total Artifacts Aligned to Each Trait
Information Literacy	Relevance of Sources	11	110
	Integration of Information	10	104
	Assumptions and Biases	9	97
	Citation	10	104
Total for Information Literacy		**30**	**415**
Integrative Thinking	Connections among Disciplines and/or Domains of Thinking	29	108
	Transfer	28	106
	Connections to Experience	29	78
Total for Integrative Thinking		**86**	**292**
Metacognitive Thinking	Project Management	9	91
	Self-Evaluation	10	100
Total for Metacognitive Thinking		**19**	**191**

Each artifact was evaluated by two independent reviewers. This project was coordinated by the Office of Assessment and Quality Initiatives.

Scoring Procedures

Evaluators assessed each artifact using the following scale:

Special Scoring Codes	
Score	**Explanation**
N/A	**Note:** This score was allowed only for artifacts where course instructors requested that the artifacts be assessed only for specific traits of the rubric (for all outcomes) and where reviewers agreed they should be able to determine if the artifacts showed evidence of specific agreed-upon traits of *Information Literacy* and *Integrative Thinking*, as described above. Scores of N/A were not included in our analysis.
Regular Scoring Codes These codes were given to artifacts that were aligned with appropriate outcomes/traits and contained enough information to allow assessment.	
1	The artifact demonstrated Level 1 performance.
2	The artifact demonstrated Level 2 performance.

3	The artifact demonstrated Level 3 performance.
4	The artifact demonstrated Level 4 performance.

Please see the supporting information that follows this summary to view the rubrics used and a detailed explanation of scoring procedures.

General Information about the Sample

Although the total sample numbered 336, two artifacts aligned to *Information Literacy* were not included in the analysis because the first was a blank page and the second student did not upload an artifact. Twelve artifacts aligned to *Metacognitive Thinking* were not included because one student did not upload an artifact, another completed the artifact as part of a 500-level course, and ten uploaded only the portion of their assignment that did not include their metacognitive reflection. This left 322 artifacts in the analysis. Of these 322 artifacts, 179 (56%) were drawn from courses at the 100/200 level, with the remaining 143 (44%) drawn from courses at the 300/400 level.

Results and Analysis

Results based on course level were as follows:

Information Literacy				**Integrative Thinking**				**Metacognitive Thinking**			
Trait	**Course Level**	**Number**	**Mean (SD)**	**Trait**	**Course Level**	**Number**	**Mean (SD)**	**Trait**	**Course Level**	**Number**	**Mean (SD)**
Relevance of Sources	100/200	65	2.76 (0.75)	**Connections among disciplines and/or domains of thinking.**	100/200	85	1.94 (0.63)	**Project Management**	100/200	16	1.63 (0.67)
	300/400	45	3.44 (0.61)		300/400	23	2.24 (0.82)		300/400	75	2.23 (0.72)
Integration of Information	100/200	59	2.45 (0.79)	**Transfer**	100/200	83	1.89 (0.63)	**Self-Evaluation**	100/200	25	1.78 (0.69)
	300/400	45	3.00 (0.71)		300/400	23	2.17 (0.85)		300/400	75	2.15 (0.67)
Assumptions & Biases	100/200	52	1.44 (0.50)	**Connections with Experience**	100/200	65	1.96 (0.58)				
	300/400	45	1.17 (0.32)		300/400	13	2.04 (0.78)				
Citation	100/200	59	1.98 (0.73)								
	300/400	45	2.34 (0.88)								

Using an adjusted alpha level of .008 to control for Type I error, pairwise comparisons for overall means for the traits of *Information Literacy* showed significant differences among all pairs (mean performance was higher for relevance of sources than for integration of information,

assumptions & biases, and citation; relatively higher for integration of information than for assumptions & biases and citation; and relatively higher for citation than for assumptions & biases. Furthermore, for *Information Literacy*, students from 300/400 level courses scored significantly higher than did students from 100/200 level course on relevance of sources and on integration of information. The opposite was true for assumptions & biases and there was no significant difference in means based on course level for citation.

Overall mean performance did not differ significantly between the traits of *Metacognitive Thinking*; however, means were significantly higher for artifacts from 300/400 level courses than for those from 100/200 level courses for both project management and for self-evaluation. There were no significant mean differences among traits or based on course level for any trait of *Integrative Thinking*.

Based on an analysis of means, relevance of sources emerged as a relative strength for *Information Literacy*, with assumptions & biases a relative weakness. Except for assumptions & biases, results generally showed that performance improved as students moved from lower to upper-level coursework. The same pattern held true for both traits of *Metacognitive Thinking*. Since the vast majority (80%) of artifacts aligned to *Integrative Thinking* were drawn from 100/200 level courses, we did not find statistical significance based on course level. However, means were slightly higher for artifacts from 300/400 level courses than for those from 100/200 level courses, with overall means approaching rubric level 2.

Frequency Analysis

Information Literacy					**Integrative Thinking**					**Metacognitive Thinking**				
Trait	**Course Level**	**% Scoring 3.5 to 4.0**	**% Scoring 2.5 to 4.0**	**% Scoring 1.5 to 4.0**	**Trait**	**Course Level**	**% Scoring 3.5 to 4.0**	**% Scoring 2.5 to 4.0**	**% Scoring 1.5 to 4.0**	**Trait**	**Course Level**	**% Scoring 3.5 to 4.0**	**% Scoring 2.5 to 4.0**	**% Scoring 1.5 to 4.0**
Relevance of Sources	100/200	26%	81%	92%	**Connections among disciplines and/or domains of thinking.**	100/200	3%	31%	87%	**Project Management**	100/200	0%	19%	69%
	300/400	67%	96%	100%		300/400	9%	45%	90%		300/400	7%	54%	93%
Integration of Information	100/200	17%	64%	91%	**Transfer**	100/200	1%	35%	81%	**Self-Evaluation**	100/200	4%	28%	76%
	300/400	42%	80%	100%		300/400	13%	39%	96%		300/400	3%	52%	93%
Assumptions & Biases	100/200	0	8%	56%	**Connections with Experience**	100/200	0	32%	90%					
	300/400	0	2%	26%		300/400	8%	46%	84%					
Citation	100/200	0	46%	77%						**Overall**	**100/200**	**2%**	**24%**	**68%**
	300/400	18%	54%	90%							**300/400**	**5%**	**53%**	**93%**

Information Literacy					Integrative Thinking					Metacognitive Thinking				
Trait	**Course Level**	**% Scoring 3.5 to 4.0**	**% Scoring 2.5 to 4.0**	**% Scoring 1.5 to 4.0**	**Trait**	**Course Level**	**% Scoring 3.5 to 4.0**	**% Scoring 2.5 to 4.0**	**% Scoring 1.5 to 4.0**	**Trait**	**Course Level**	**% Scoring 3.5 to 4.0**	**% Scoring 2.5 to 4.0**	**% Scoring 1.5 to 4.0**
Overall	**100/200**	**11%**	**51%**	**79%**	**Overall**	**100/200**	**2%**	**34%**	**86%**					
	300/400	**32%**	**58%**	**79%**		**300/400**	**9%**	**39%**	**90%**					

It is difficult to interpret these results by examining overall performance on any one outcome, especially for *Information Literacy*. For example, 67% and 42% of students enrolled in 300/400 level courses aligned to *Information Literacy* scored 3.5 or higher on relevance of sources and integration of information respectively, with no students enrolled in 300/400 level courses scoring at level 1. On the other hand, no students enrolled in either 100/200 or 300/400 level courses scored 3.5 or higher on assumptions & biases and no students enrolled in 100/200 level courses scored at this level on citation, with only 18% from 300/400 level courses scoring at this level on citation. Indeed, for assumptions & biases 56 of a total of 96 (58%) artifacts received scores of 1.0.

The majority (80%) of the traits that aligned to *Integrative Thinking* were from 100/200 level courses. Eighty-six percent (86%) of students from 100/200 level courses received scores between 1.5 and 4.0, while 90% of those enrolled in 300/400 level courses scored in this range. This left only 14% (100/200) and 10% (300/400 level) scoring at level 1. However, on average only 9% of artifacts from 300/400 level courses scored between 3.5 and 4, while only 2% of artifacts from 100/200 level courses scored at this level. More than half (53%) of 100/200 level artifacts scored between 1.5 and 2.0, as did 48% of 300/400 level artifacts.

Metacognitive Thinking was the opposite of *Integrative Thinking*, with 75% of artifacts from 300/400 level and 25% from 100/200 level courses. That said, students were more likely to score lower on *Metacognitive Thinking* artifacts from 100/200 level courses than on artifacts from 300/400 level courses. This held true for both traits – project management and self-evaluation. Approximately 93% of 300/400 level artifacts scored in the range of 1.5 to 4.0, with only 68% of 100/200 level artifacts scoring in this range.

Taken together, both the analysis of means and frequency analysis suggest investigating the importance of the assumptions & biases trait of *Information Literacy* and whether our students have sufficient practice needed to achieve competence in this trait. Regarding *Integrative Thinking*, since most of the artifacts for this evaluation were from general education courses, particularly courses designated as "critical thinking" courses, and most scores were in the range of 1.5 to 3.0 (please see supporting documentation following this summary), we feel that most students are progressing as they should in this area. This finding aligns with feedback from students on our annual Core Curriculum Survey, where they have given the highest rating for the past nine years agreeing that they have, "used knowledge from more than one area of study to explore issues and to solve problems." Finally, we note that, for two traits of *Information Literacy* and for both traits of *Metacognitive*

Thinking, mean scores for artifacts from 300/400 level courses were significantly higher than mean scores from 100/200 level courses, indicating that students continue to improve their knowledge and skills in these areas in their program specific courses.

Results for Course Type

Analyzing results by course type posed several challenges. Courses analyzed this year could have more than one attribute (e.g., Critical Thinking [CT], Writing Intensive [WI], Core II, Capstone, Multicultural, International, Community-Based Learning, Honors, Capstone, and Online) in combination (and many did). So, when analyzing results by course type, we included all courses with the attribute we wanted to assess; this resulted in some courses being included in the analysis for more than one course type.

Critical Thinking (CT) Courses

CT courses in the assessment sample included those that aligned to each of the outcomes assessed. All CT courses are at the 100/200 level. Results are below:

Information Literacy			**Integrative Thinking**			**Metacognitive Thinking**		
Trait	**Number**	**Mean (SD)**	**Trait**	**Number**	**Mean (SD)**	**Trait**	**Number**	**Mean (SD)**
Relevance of Sources	58	2.85 (0.71)	**Connections among Disciplines/ Domains**	83	1.95 (0.62)	**Project Management**	0	N/A
Integration of Information	52	2.52 (0.75)	**Transfer**	81	1.88 (0.63)	**Self-Evaluation**	9	2.00 (0.75)
Assumptions & Biases	52	1.44 (0.50)	**Connections to Experience**	64	1.96 (0.59)			
Citation	52	2.07 (0.71)						

Mean scores for *Information Literacy* suggest strong performance from students in CT courses for all traits except assumptions & biases. We recommend further exploration regarding why this trait appears not to be addressed on the same level as the others. Mean scores of all traits of *Integrative Thinking* approach a mean of 2.0 and indirect assessment from surveys show that students feel they receive strong instruction in this outcome. We recommend reviewing the rubric to see if it is adequately capturing the competencies students have acquired. Due to the small /*n*/ for *Metacognitive Thinking* and the fact that the artifacts aligned only to self-evaluation, it is difficult to interpret these results.

Core II Courses

Core II courses in the assessment sample included those that aligned to each of the outcomes assessed. All Core II courses are at the 100/200 level, and many are also CT courses. Results are below:

Information Literacy			Integrative Thinking			Metacognitive Thinking		
Trait	**Number**	**Mean (SD)**	**Trait**	**Number**	**Mean (SD)**	**Trait**	**Number**	**Mean (SD)**
Relevance of Sources	58	2.85 (0.71)	**Connections among Disciplines/ Domains**	71	1.96 (0.65)	**Project Management**	0	N/A
Integration of Information	52	2.52 (0.75)	**Transfer**	69	1.91 (0.64)	**Self-Evaluation**	9	2.00 (0.75)
Assumptions & Biases	52	1.44 (0.50)	**Connections to Experience**	59	2.00 (0.58)			
Citation	52	2.07 (0.71)						

Since all Core II courses aligned to *Information Literacy* and *Metacognitive Thinking* were also CT courses, we refer the reader to the previous discussion of results. Mean scores of all traits of *Integrative Thinking* approach (or reach) a mean of 2.0.

Writing Intensive (WI) Courses

WI courses in the sample aligned to all outcomes assessed. Results are given below by course level:

Information Literacy				Integrative Thinking				Metacognitive Thinking			
Trait	**Course Level**	**Number**	**Mean (SD)**	**Trait**	**Course Level**	**Number**	**Mean (SD)**	**Trait**	**Course Level**	**Number**	**Mean (SD)**
Relevance of Sources	100/200	13	2.73 (0.93)	**Connections among Disciplines/ Domains**	100/200	43	1.91 (0.56)	**Project Management**	100/200	0	N/A
	300/400	21	3.55 (0.61)		300/400	12	2.04 (0.78)		300/400	61	2.12 (0.71)
Integration of Information	100/200	7	2.64 (0.69)	**Transfer**	100/200	41	1.89 (0.67)	**Self-Evaluation**	100/200	9	2.22 (0.75)
	300/400	21	3.17 (0.66)		300/400	12	2.00 (0.71)		300/400	61	2.05 (0.66)
Assumptions & Biases	100/200	7	1.07 (0.19)	**Connections to Experience**	100/200	28	1.98 (0.63)				
	300/400	21	1.12 (0.27)		300/400	5	1.80 (0.67)				

Information Literacy				Integrative Thinking				Metacognitive Thinking			
Citation	100/200	7	1.86 (0.75)								
	300/400	21	2.41 (0.96)								

Except for *Integrative Thinking,* more artifacts from WI courses were drawn from 300/400 than from 100/200 level courses. Due to the small /*n*/s in one level of each comparison, we interpret these results with caution. However, the trend for *Information Literacy* follows the overall findings of the project, that is that artifacts from 300/400 level courses had higher means for three of the outcomes' four traits. Unlike in the overall analysis, the WI 300/400 level artifacts had a slightly higher mean performance on assumptions & biases than did 100/200 level artifacts, but this difference was not large enough to be significant. Results for *Integrative Thinking* were mixed, but the small /*n*/ at the 300-400 level made it difficult to draw conclusions. Almost all artifacts aligned to *Metacognitive Thinking* were drawn from 300/400 level courses and their means were closer to level 2 than to level 3.

Multicultural (MC) Courses

MC courses in the assessment sample aligned to *Information Literacy* and *Integrative Thinking*. Results are given below:

Information Literacy				Integrative Thinking			
Trait	**Course Level**	**Number**	**Mean (SD)**	**Trait**	**Course Level**	**Number**	**Mean (SD)**
Relevance of Sources	100/200	52	2.92 (0.63)	**Connections among Disciplines/ Domains**	100/200	56	1.92 (0.66)
	300/400	6	3.33 (0.61)		300/400	2	2.75 (1.77)
Integration of Information	100/200	52	2.52 (0.75)	**Transfer**	100/200	56	1.88 (0.66)
	300/400	6	2.17 (0.26)		300/400	2	3.25 (0.35)
Assumptions & Biases	100/200	52	1.44 (0.50)	**Connections to Experience**	100/200	50	1.96 (0.59)
	300/400	6	1.17 (0.26)		300/400	1	2.50 (N/A)
Citation	100/200	52	2.07 (0.71)				
	300/400	6	1.58 (0.38)				

Most multicultural artifacts for this analysis were drawn from courses at the 100/200 level. Mean scores for the first two traits of *Information Literacy* for 100/200 level courses exceeded level 2 and the third trait reached level 2. Mean performance for all traits of *Integrative Thinking* for courses at the 100/200 level closely approached level 2.

Honors Courses

Ten artifacts in the sample aligned to *Integrative Thinking*. All were at the 100/200 level.

Integrative Thinking		
Trait	**Number**	**Mean (SD)**
Connections among Disciplines/ Domains	10	1.75 (0.54)
Transfer	10	1.95 (0.76)
Connections to Experience	8	2.25 (0.80)

This small sample of Honors courses were at the 100/200 level. All mean scores were either above or approached level 2.

***Capstone Courses*:** All capstone courses were at the 400-level.

Information Literacy			Integrative Thinking			Metacognitive Thinking		
Trait	**Number**	**Mean (SD)**	**Trait**	**Number**	**Mean (SD)**	**Trait**	**Number**	**Mean (SD)**
Relevance of Sources	19	3.55 (0.66)	**Connections among Disciplines/ Domains**	15	2.33 (0.77)	**Project Management**	60	2.33 (0.67)
Integration of Information	19	3.29 (0.61)	**Transfer**	15	2.20 (0.88)	**Self-Evaluation**	60	2.23 (0.65)
Assumptions & Biases	19	1.21 (0.42)	**Connections to Experience**	8	2.06 (0.94)			
Citation	19	2.53 (0.89)						

As with overall analyses, the first two traits of *Information Literacy* were stronger than scores for *Integrative* or *Metacognitive Thinking*. There was a very small number of artifacts from capstone courses in this analysis, so no conclusion can be drawn, but we would like to see all mean scores at least approach level 3.

Online Courses

Information Literacy				Integrative Thinking			
Trait	**Course Level**	**Number**	**Mean (SD)**	**Trait**	**Course Level**	**Number**	**Mean (SD)**
Relevance of Sources	100/200	13	2.35 (0.90)	**Connections among Disciplines/ Domains**	100/200	28	2.02 (0.52)
	300/400	12	3.42 (0.85)		300/400	7	1.93 (0.53)
Integration of Information	100/200	7	2.07 (0.67)	**Transfer**	100/200	26	1.96 (0.39)
	300/400	12	3.04 (0.75)		300/400	7	1.71 (0.39)
Assumptions & Biases	100/200	7	1.21 (0.27)	**Connections to Experience**	100/200	23	2.00 (0.50)
	300/400	12	1.04 (0.14)		300/400	3	1.33 (0.29)
Citation	100/200	7	2.21 (0.86)				
	300/400	12	2.25 (0.99)				

As with capstone courses, we had a small number of artifacts from online courses in this sample. We recommend further comparison of scores, especially comparing the same courses taught in each format, in future assessments.

Conclusion

Overall Analysis

We used rubrics this year that measured student performance according to the level of sophistication they demonstrated in performance on each trait of the three Baccalaureate Degree Profile (BDP) outcomes assessed. BDP outcomes specify what students are expected to achieve at the time they receive their baccalaureate degrees. The proportion of artifacts from 300/400 level courses in our sample comprised 41% (45 out of 110) of the *Information Literacy* sample, 31% (23 out of 112) of the *Integrative Thinking* sample, and 75% (75/100) of the *Metacognitive Thinking* sample.

Overall, performance was strongest in *Information Literacy*, with artifacts from 300/400 level courses scoring significantly higher than those from 100/200 level courses for relevance of sources (mean = 3.44 [300/400] as compared to 2.76 [100/200]) and integration of information (mean = 3.00 [300/400] as compared to 2.45 [100/200]). Mean scores for artifacts from 300/400 level courses for the traits of *Integrative Thinking* ranged from 2.04 to 2.24 (300/400) as compared to 1.89 to 1.96 (100/200). The ranges for *Metacognitive Thinking* were 2.15 to 2.23 (300/400) as compared to 1.63 to 1.78 (100/200). Taken together, this year's results show that students are improving knowledge and skills in these areas of the BDP as they progress through their education at Marshall University.

Course Type Analysis

Results show that Marshall's students are scoring at appropriate levels in Critical Thinking (CT) courses in all outcomes assessed this cycle, with their strongest performance occurring in the first two traits of *Information Literacy*. Mean scores on the three traits of *Integrative Thinking*, a

key outcome addressed in all CT courses, ranged from 1.88 (transfer) to 1.96 (connections to experience). These means are close to rubric level 2. Scores were similar for artifacts from Marshall's courses with multicultural designations, most of whose artifacts came from courses at the 100/200 level. Scores for the small number of 400-level capstone courses were higher, although we would like to see mean scores in these classes closer to level 3 for *Integrative* and *Metacognitive Thinking*.

Recommendations from the 2023 Assessment Team

The 2023 Summer Assessment Team made the following recommendations:

1. That, as per the provost's recommendation, we review the Core Curriculum during academic year 2023-2024 (please refer to responses to last year's recommendations at the beginning of this report), paying special attention to reviewing the traits of each Baccalaureate Degree Profile (BDP) outcome, with special attention to the appropriateness of each outcome's traits.
2. That the Office of Assessment download each undergraduate degree program's alignment of its outcomes to those of the BDP and conduct an analysis of the extent to which program specific coursework at the 300/400 level extends students' proficiency with each of the BDP outcomes. Starting in academic year 2023-2024, these alignments will be included in each program's five-year program review.
3. That we work with the university's General Education Council, which is in the process of recertifying courses that are currently certified as *multicultural* or *international,* to make sure programs understand that creating at least one substantive assignment that allows students to upload authentic work to the assignment module in Blackboard so that these artifacts may be randomly drawn for assessment is required of all courses bearing these certifications.
4. That, as part of the review of the Core Curriculum, we pay special attention to the context & assumptions trait of *Information Literacy*. From last year's recommendations, we also recommend careful review of the *Creative Thinking* outcome and rubric. We further recommend a review of both traits of *Metacognitive Thinking*.
5. That next summer's assessment include a comparison of matched courses where one section is taught face-to-face, and the other section is taught via distance delivery. For this analysis, distance delivery should be clearly defined as either virtual, asynchronous, or some combination.

Supporting Documentation

Baccalaureate Degree Profile Artifact Assessment

Academic Year 2022 – 2023

Outcomes Assessed: MU Rubrics

Outcome	Abbreviation	Traits	Abbreviations
Information Literacy	**IL**	Relevance of Sources	Relevance
		Integration of Information	Integration
		Assumptions and Biases	A & B
		Citation	Citation
Integrative Thinking	**IT**	Connections among Disciplines and/or Domains of Thinking	Disciplines/Domains
		Transfer	Transfer
		Connections to Experience	Experience
Metacognitive Thinking	**MT**	Project Management	Project
		Self-Evaluation	Self

Course Types

Course Type	Abbreviation
Critical Thinking	CT
Multicultural	MC
International	INT
Writing Intensive	WI
Community Based Learning	CBL
Core II	Core II
Senior Capstone	Capstone
Honors	Honors
Online	Online

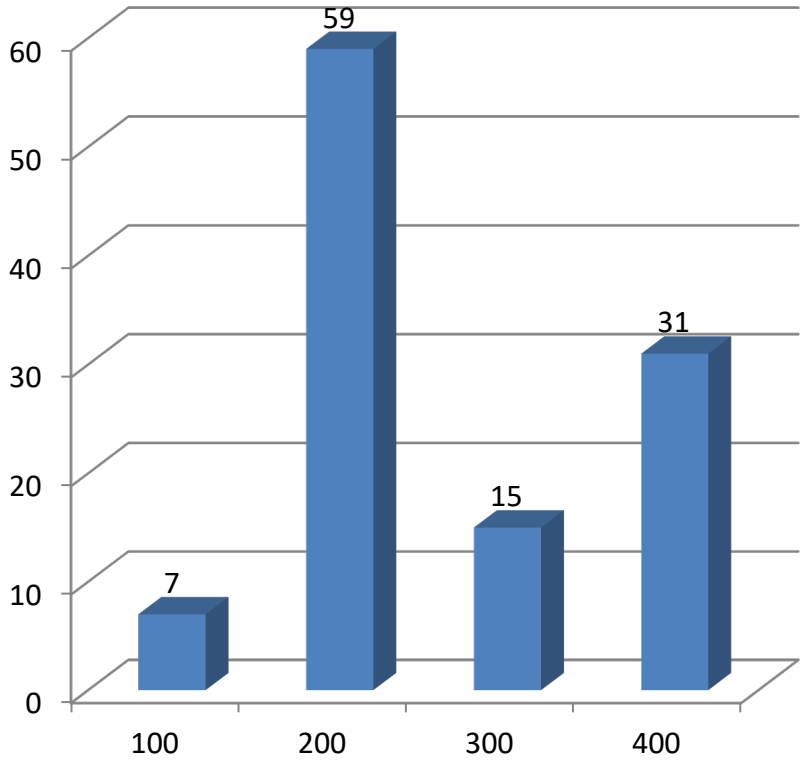
Population/Sample Comparisons for Marshall's Learning Outcomes by Course Level

Marshall Outcomes	Course Level = 100/200			Course Level = 300/400		
	Population	**Sample**	**Percent**	**Population**	**Sample**	**Percent**
Information Literacy	141	66	47%	125	46	37%
Integrative Thinking	686	89	13%	155	23	15%
Metacognitive Thinking	103	35	34%	186	77	41%
Total	**930**	**190**	**20%**	**466**	**146**	**31%**

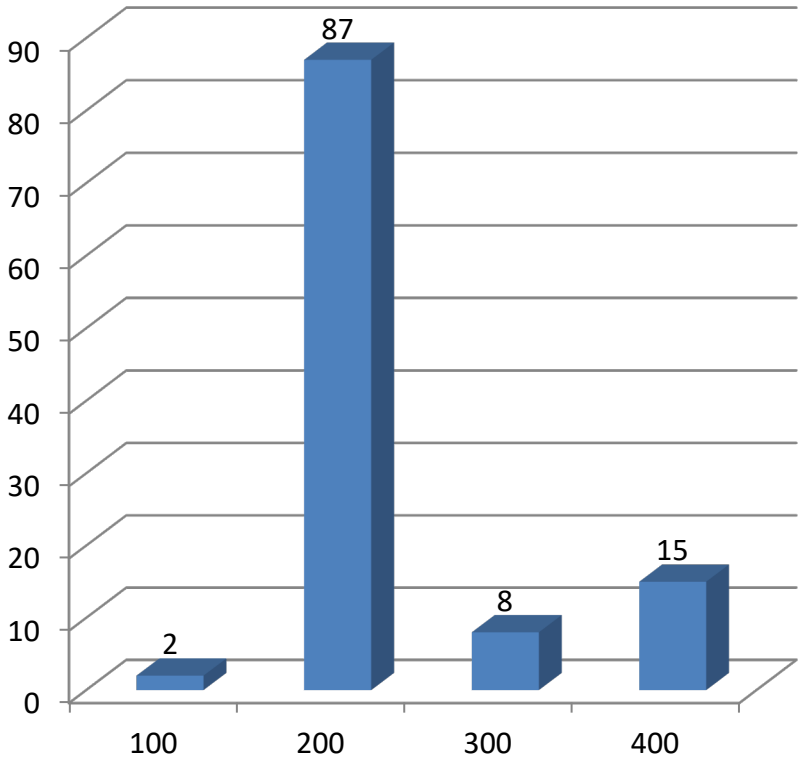
Sample Frequencies

Total # of artifacts assessed = 112 per outcome

Course Level Frequencies: Information Literacy



Course Level Frequencies: Integrative Thinking

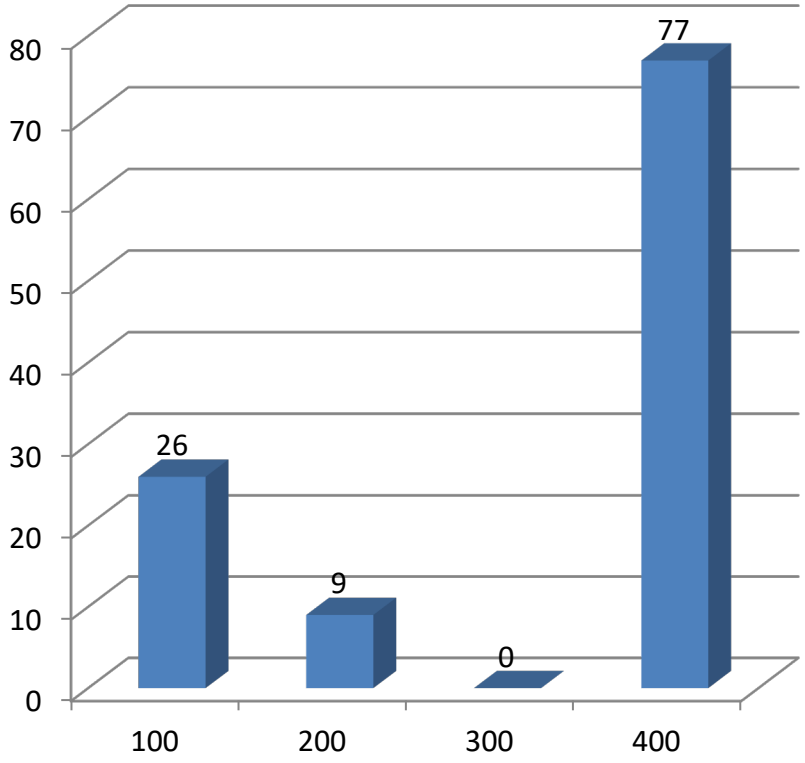


Sample Frequencies

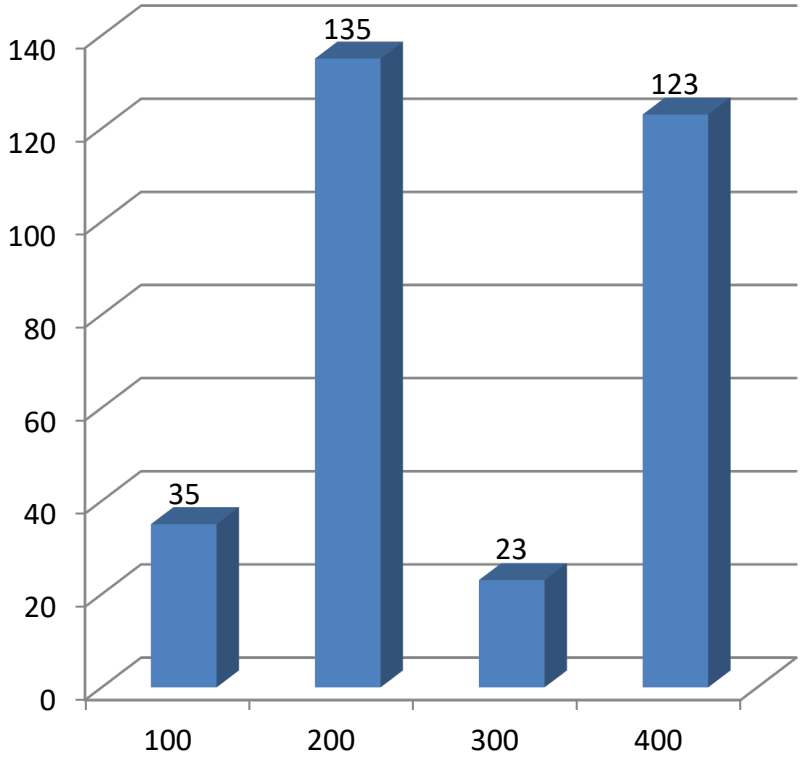
Total # of artifacts assessed = 112 per outcome

Total = 336

Course Level Frequencies: Metacognitive Thinking



Course Level Frequencies: Total across the three outcomes



Review Procedures

- Each artifact had two independent raters and usable scores on the 1 – 4 scale were determined in the following manner:
  - If raters assigned the same score, that became the score for the artifact.
  - If raters' scores differed by one point, e.g., Rater 1 assigned a score of 1 and Rater 2 a score of 2, the final score was the mean, i.e., 1.5.
  - If raters' scores differed by more than one point, e.g., Rater 1 assigned a score of 1 and Rater 2 a score of 3, the raters met to discuss the rationale for their scores to see if they could agree on a score or, at minimum, scores that differed by no more than one point.
  - If raters' scores differed by more than one point and, after discussion, they were not able to resolve the differences, a third rater was assigned to review the artifact. (For this review, all raters were able to reconcile disagreements, so third raters were not needed).

Review Procedures

- During our norming sessions for *Information* Literacy, we determined that some artifacts should not be scored for Trait 3 *(*assumptions and biases*).* For a few assignments for all outcomes *(Information Literacy, Integrative Thinking*, and *Metacognitive Thinking*), instructors indicated they only wanted specified traits assessed. For these two reasons, the only trait of *Information Literacy* that received scores for all scorable artifacts was relevance of sources. The only trait of *Metacognitive Thinking* to receive scores for all scorable artifacts was self-evaluation, and no trait of *Integrative Thinking* received scores for all its scorable artifacts.

Interrater Reliability

- We conducted interrater reliability analyses using the Cohen's Kappa statistical procedure. In so doing, we used the following rules, similar to those suggested Stellmack, Kohneim-Kalkstein, Manor, Massey, & Schmitz (2009):
  - Since our scoring procedure was to average final scores between two raters when scores differed by only one point, we used that averaged score (e.g., 1.5) as the score for both raters, counting it as an agreement in the interrater reliability analysis.
  - For scores that were two or more points apart, the original score of each reviewer was used in the analysis. Therefore, these scores were counted as disagreements.
  - Any time one rater scored the artifact as *N/A* (when it was supposed to have a score) and another provided a score, the scores were counted as disagreements in the analysis.

Artifacts Excluded from Analysis of Means Due to Inability to Assess or Misalignment with Tagged Outcomes

Outcome	Total Artifacts	Total Artifacts Not Able to be Scored	Total Used for Analysis
Information Literacy	112	2 (due to no artifact uploaded)	110
Integrative Thinking	112	0	112
Metacognitive Thinking	112	12 (10 due failure to include reflection, one due to no artifact uploaded, and one was submitted by a graduate student)	101
Total	**336**	**14**	**322**

Revised Information Literacy MU Rubric

Information Literacy: Students will **employ** appropriate research tools, **integrate** relevant information from reliable sources, **question and evaluate** information and its sources, and **cite sources** in an academic manner.

Traits: Performance Indicators/Performance Levels	**Level 0 (N/A)**	**Level 1**	**Level 2**	**Level 3**	**Level 4**
Relevance of Sources: **Employs** appropriate research tools (i.e. sources).	**Use this score only if the instructor did not include this trait in their assignment instructions.**	**Uses** questionable sources or no sources at all.	**Uses** a combination of reliable and questionable sources.	**Uses** mostly reliable sources or does not reflect the depth of research required by the artifact.	**Uses** reliable sources that are adequate to the depth or research required by the artifact.
Integration of Information: **Integrates** relevant information from reliable sources.	**Use this score only if the instructor did not include this trait in their assignment instructions.**	**Fails to integrate i**nformation (disorganized presentation).	**Inappropriate integration** of information (inappropriate sequential presentation, e.g., one source at a time).	**Some integration** of information relevant to the type of artifact (mix of appropriate and inappropriate presentation).	**Appropriately integrates** information relevant to the type of artifact.
Assumptions and Biases: **Questions** and **evaluates** information and its sources.	This assignment does not require students to question and evaluate the information and its sources.	**Reports** information at face value.	**Shows** some evidence of appropriately questioning assumptions and biases of sources.	**Shows** evidence of appropriately questioning multiple assumptions and biases of sources.	**Analyzes** assumptions and biases and **evaluates** the relevance of contexts as described in sources.
Citation: Cites sources in an academic manner.	**Use this score only if the instructor did not include this trait in their assignment instructions.**	**Inappropriate** use of paraphrasing, quotes, and/or citations.	**Inconsistent** use of paraphrasing, quotes, and/or citations.	**Acceptable** use of paraphrasing, quotes, and/or citations.	**Correct** use of paraphrasing, quotes, and citations using the style manual of the discipline (as appropriate).

Revised Integrative Thinking MU Rubric

Integrative Thinking: Students will **make connections** and **transfer** skills and learning among varied disciplines, domains of thinking, experiences, and situations.

Traits: Performance Indicators/Performance Levels	**Level 0 (N/A)**	**Level 1**	**Level 2**	**Level 3**	**Level 4**
Connections among Disciplines and/or Domains: Connects examples, facts, or theories from more than one discipline and/or domain of thinking.	**Use this score only if the instructor did not include this trait in their assignment instructions.**	**Connects** in a rudimentary manner.	**Connects** in an emerging manner.	**Connects** in a thorough manner.	**Creates** wholes out of multiple parts (synthesizes) or draws conclusions.
Transfer: Adapts and applies skills, abilities, theories, or methodologies gained in one situation and/or discipline/domain to other situations and/or other disciplines/domains.	**Use this score only if the instructor did not include this trait in their assignment instructions.**	**Adapts or applies** in a rudimentary manner**.**	**Adapts or applies** in an emerging manner**.**	**Adapts and applies** in a thorough manner.	**Adapts and applies** in an original or complex manner.
Connections to Experience: Connects relevant experience and academic knowledge.	**Instructor did not include as part of the assignment or evaluator does not see this connection.**	**Connects** in a rudimentary manner.	**Connects** in an emerging manner.	**Connects** in a thorough manner.	**Creates** wholes out of multiple parts (synthesizes) or draws conclusions.

Revised Metacognitive Thinking MU Rubric

Metacognitive Thinking: Students will **evaluate** the effectiveness of a project plan or strategy to **determine** their improvement in knowledge and skills.

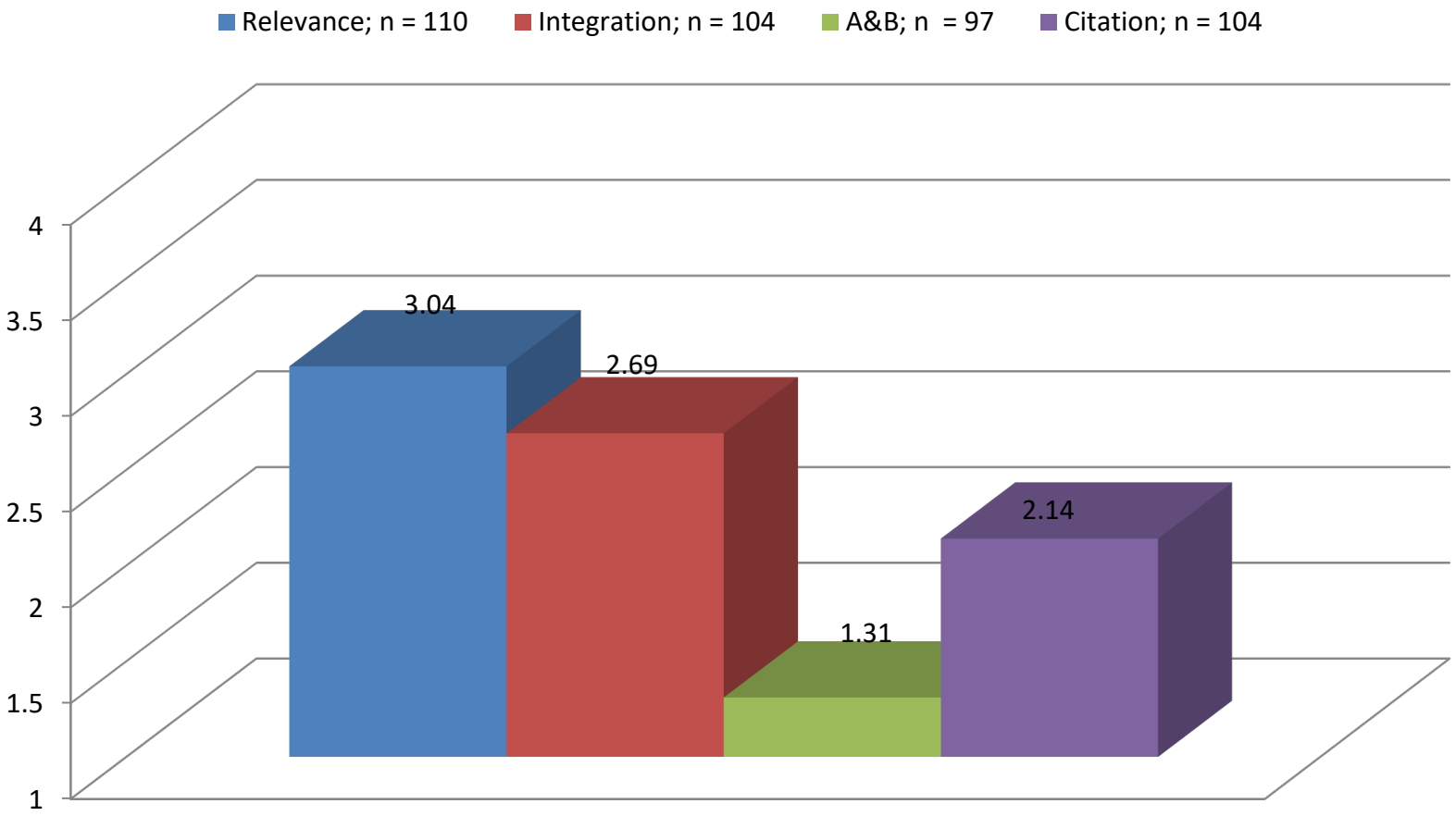
Traits: Performance Indicators/Performance Levels	Level 0 (N/A)	Level 1	Level 2	Level 3	Level 4
Project Management: **Evaluates** the effectiveness of a project plan or strategy.	**Use this score only if the instructor did not include this trait in their assignment instructions.**	**Evaluation:** Superficial (If merely reporting)	**Evaluation:** Clearly identifies strengths and weaknesses.	**Evaluation:** • Clearly identifies strengths and weaknesses. • Evidence of continual reflection or improvement. • Proposes an improvement plan that is general in nature.	**Evaluation:** • Clearly identifies strengths and weaknesses. • Evidence of continual reflection or improvement. • Proposes an improvement plan that is detailed.
Self-evaluation: **Evaluates** improvement in knowledge and skills.	**Use this score only if the instructor did not include this trait in their assignment instructions.**	**Reflects:** In a superficial manner (If merely reporting)	**Reflects:** • With some depth • Without evidence of continual reflection or improvement.	**Reflects:** • With some depth • Evidence of continual reflection or improvement. • Acknowledges general changes in perspectives regarding their own learning.	**Reflects:** • In depth • Evidence of continual reflection or improvement. • Evaluates specific changes in perspectives regarding their own learning.

Information Literacy

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score

(Although there were 110 artifacts in the analysis, not all artifacts aligned to every trait)
All mean differences are significant.

Overall Analysis



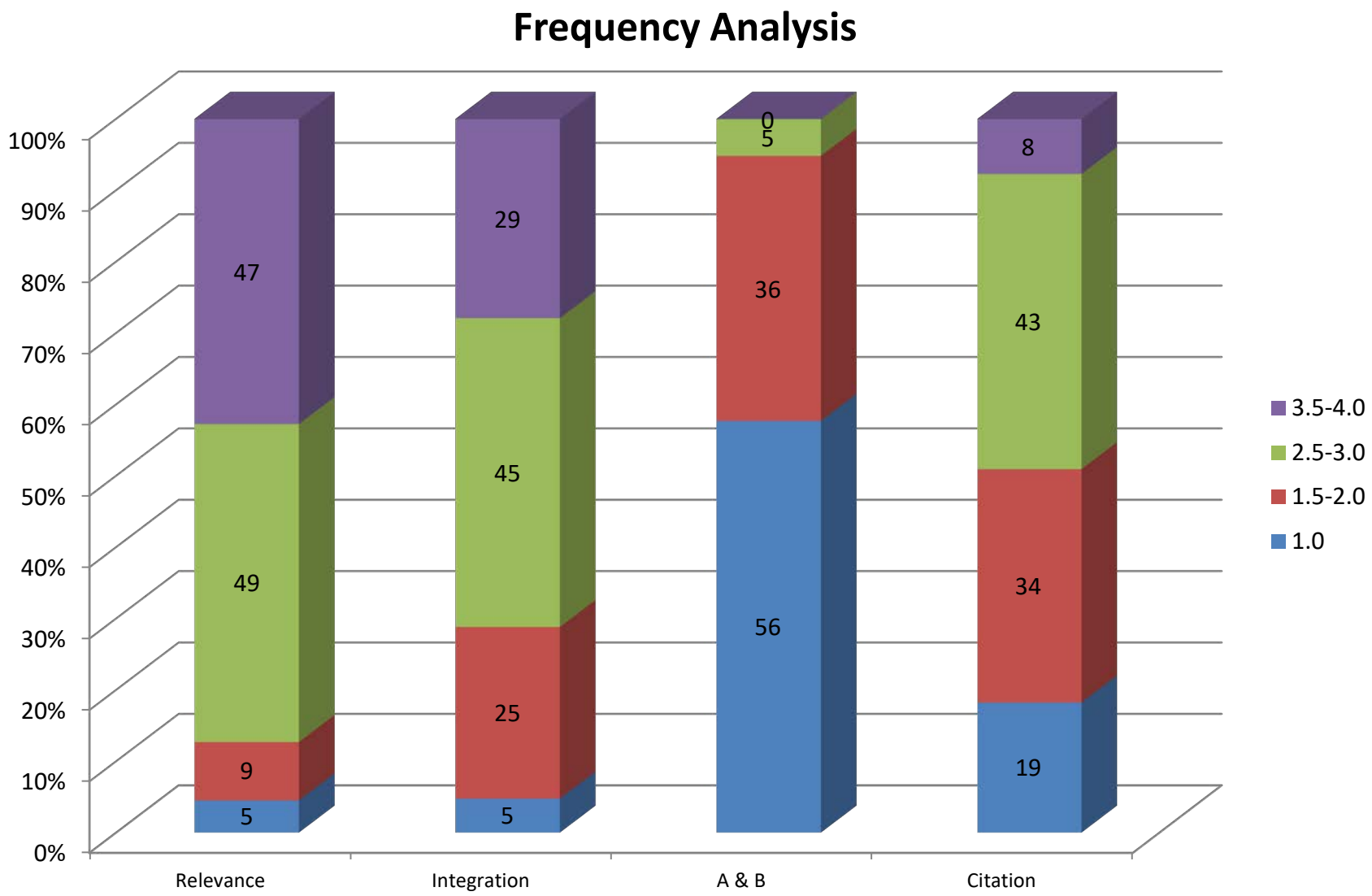
Information Literacy

Frequency Analysis

Number of artifacts (with usable scores) scoring at each performance level

Trait/ Performance Level	Relevance	Integration	Assumptions & Biases	Citation	Total
1.0	5 (5%)	5 (5%)	56 (58%)	19 (18%)	85 (20%)
1.5 – 2.0	9 (8%)	25 (24%)	36 (37%)	34 (33%)	104 (25%)
2.5 – 3.0	49 (45%)	45 (43%)	5 (5%)	43 (41%)	141 (34%)
3.5 – 4.0	47 (43%)	29 (28%)	0	8 (8%)	85 (20%)
Total Tags with Usable Scores	**110**	**104**	**97**	**104**	**415**

Information Literacy

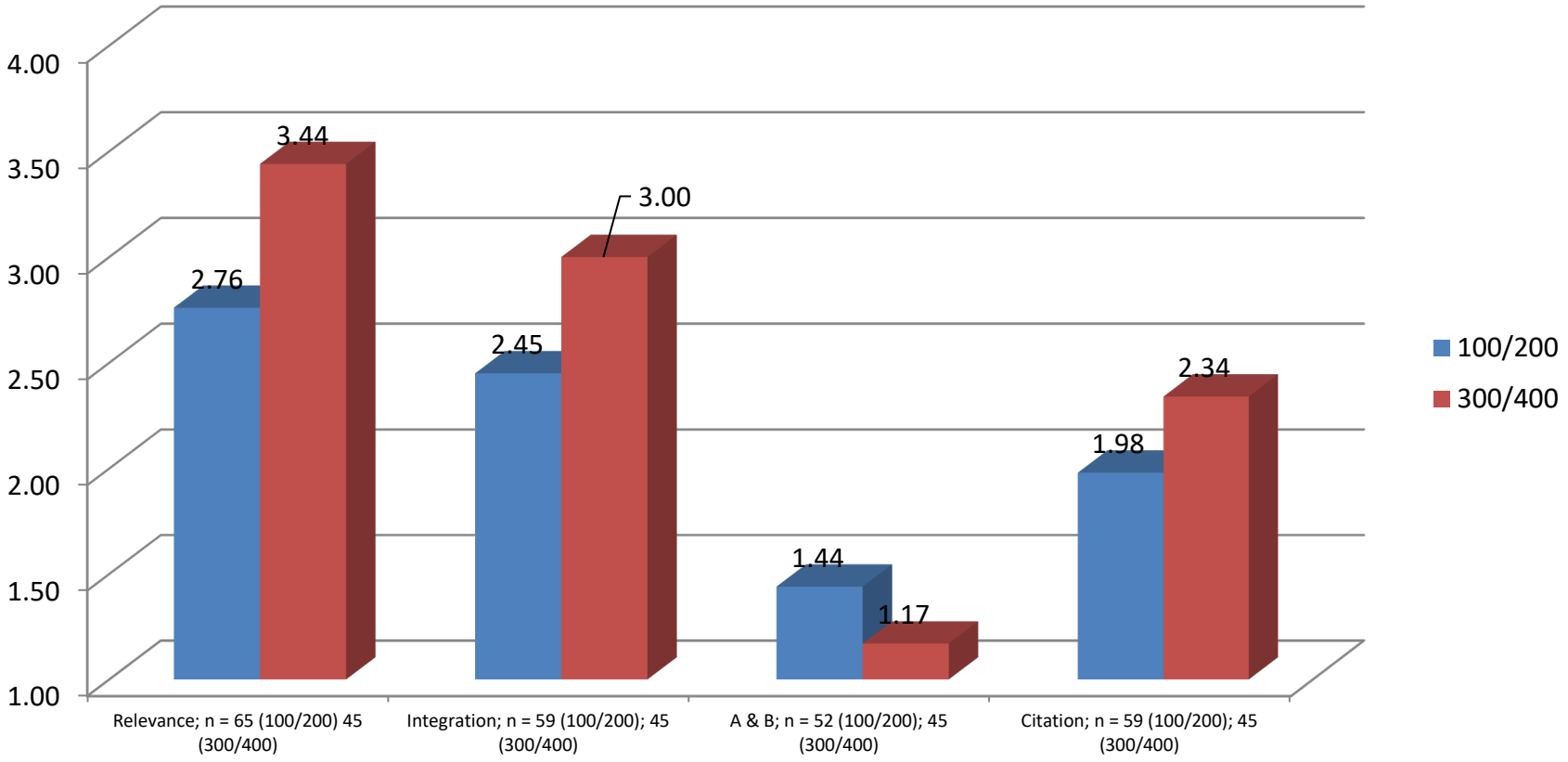


Information Literacy

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score

Means for 300/400 level courses were significantly higher than those for 100/200 level courses for *Relevance* and *Integration*, while the opposite was true for *Assumptions and Biases*. The difference in means for *Citation* was not significant.

Course Level Analysis



Information Literacy

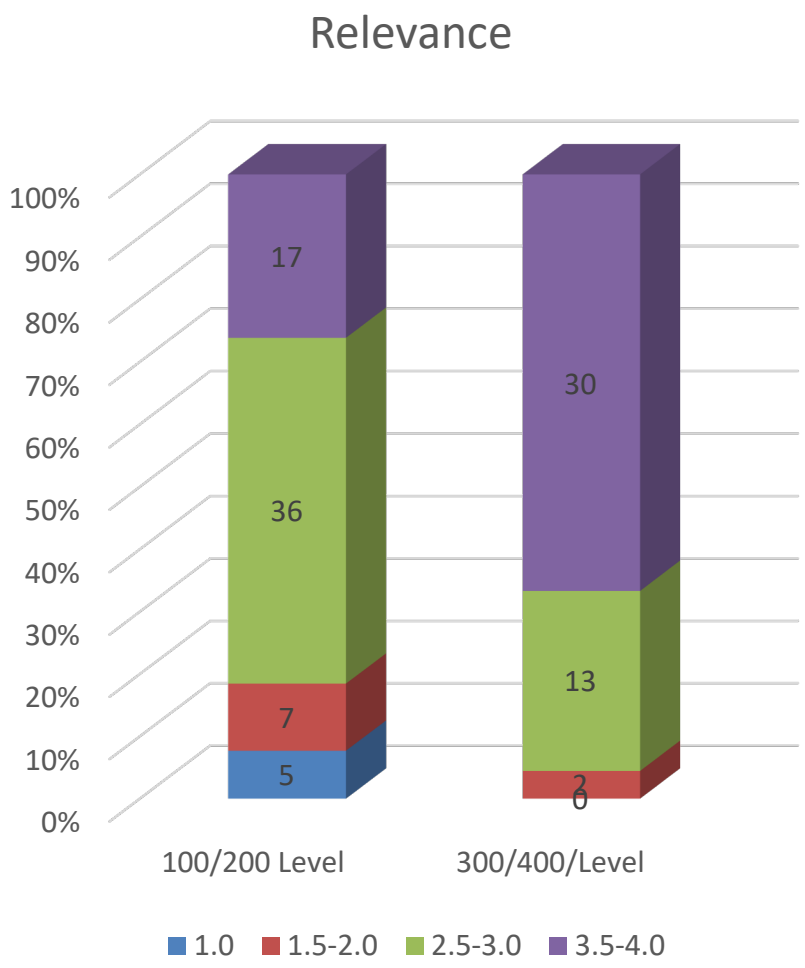
Frequency Analysis by Course Level

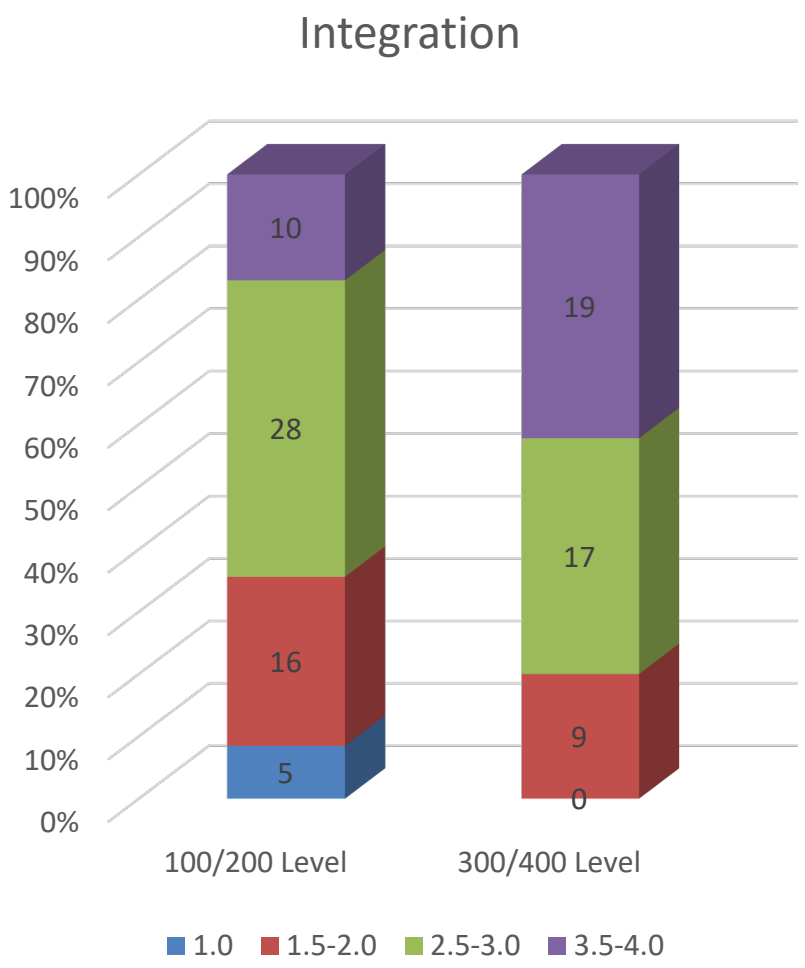
Number of artifacts (with usable scores) scoring at each performance level

Course Level	Trait/ Performance Level	Relevance	Integration	Assumptions & Biases	Citation	Total
100/200	1.0	5 (8%)	5 (8%)	23 (44%)	14 (24%)	47 (20%)
300/400		0	0	33 (73%)	5 (11%)	38 (21%)
100/200	1.5 – 2.0	7 (11%)	16 (27%)	25 (48%)	18 (31%)	66 (28%)
300/400		2 (4%)	9 (20%)	11 (24%)	16 (36%)	38 (21%)
100/200	2.5 – 3.0	36 (55%)	28 (47%)	4 (8%)	27 (46%)	95 (40%)
300/400		13 (29%)	17 (38%)	1 (2%)	16 (36%)	46 (26%)
100/200	3.5 – 4.0	17 (26%)	10 (17%)	0	0	27 (11%)
300/400		30 (67%)	19 (42%)	0	8 (18%)	58 (32%)
100/200	**Total with Usable Scores**	**65**	**59**	**52**	**59**	**235**
300/400		**45**	**45**	**45**	**45**	**180**
All Course Levels	**Grand Totals**	**110**	**104**	**97**	**104**	**415**

Information Literacy

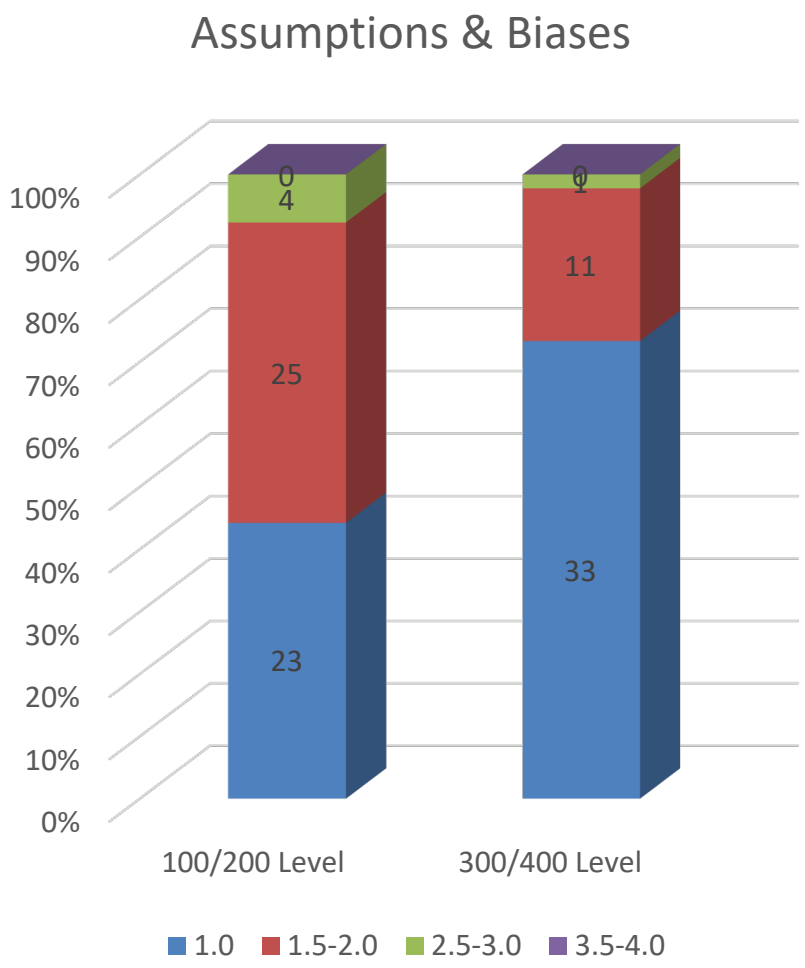
Frequency Analysis by Course Level

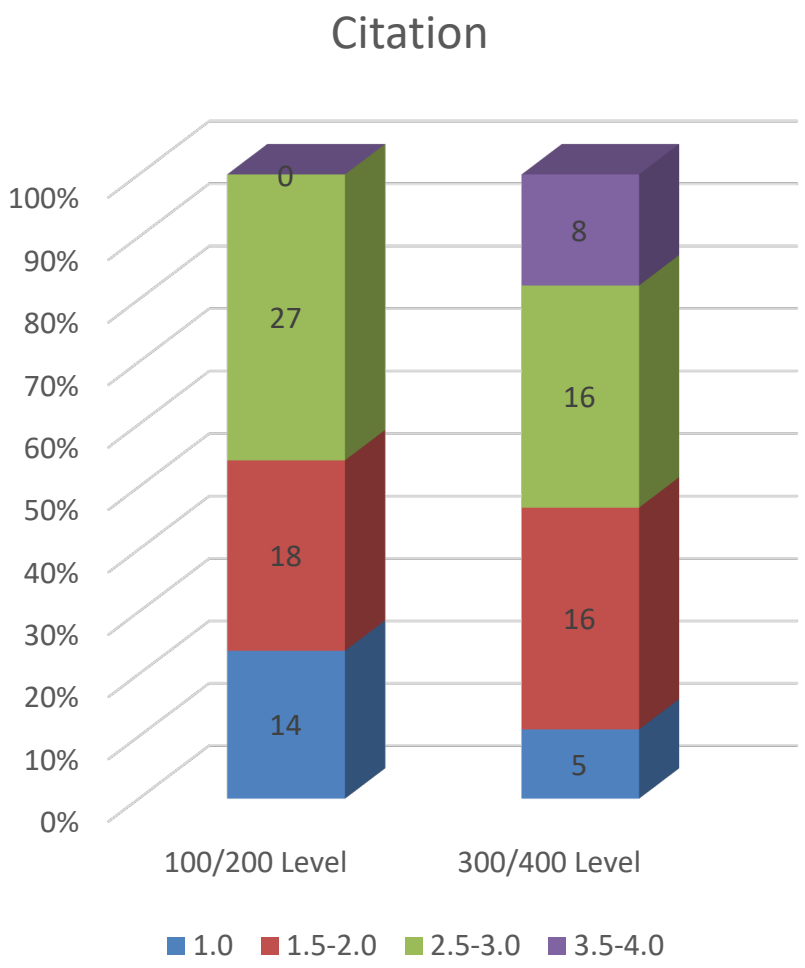




Information Literacy

Frequency Analysis by Course Level





Information Literacy

Inter-Rater Agreement Results

Trait/ Performance Level	Relation Cohen's Kappa (Liberal) = .864	Integration Cohen's Kappa (Liberal)= .883	Assumptions Cohen's Kappa (Liberal)= .943	Citation Cohen's Kappa (Liberal)= .870
Agree on score	57 (52%)	50 (45%)	76 (69%)	52 (47%)
Difference = 1 point	41 (37%)	49 (45%)	30 (27%)	46 (42%)
Difference = 2 points	11 (10%)	10 (9%)	4 (4%)	9 (8%)
Difference = 3 points	1 (1%)	1 (1%)	0	3 (3%)
Total	**110**	**110**	**110**	**110**

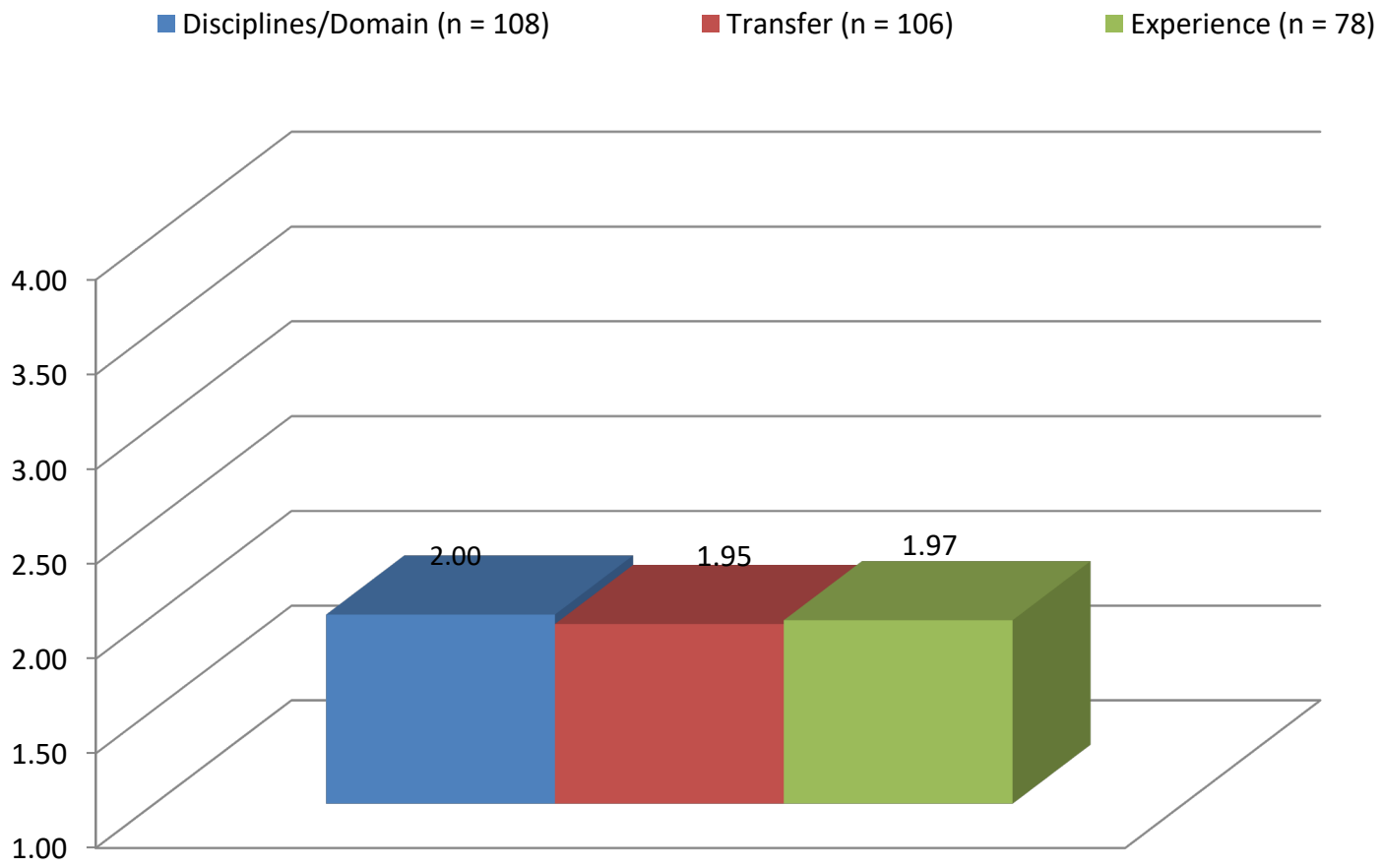
Integrative Thinking

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

(Although there were 112 artifacts in the analysis, not all artifacts aligned to every trait)

There is no significance among traits.

Overall Analysis



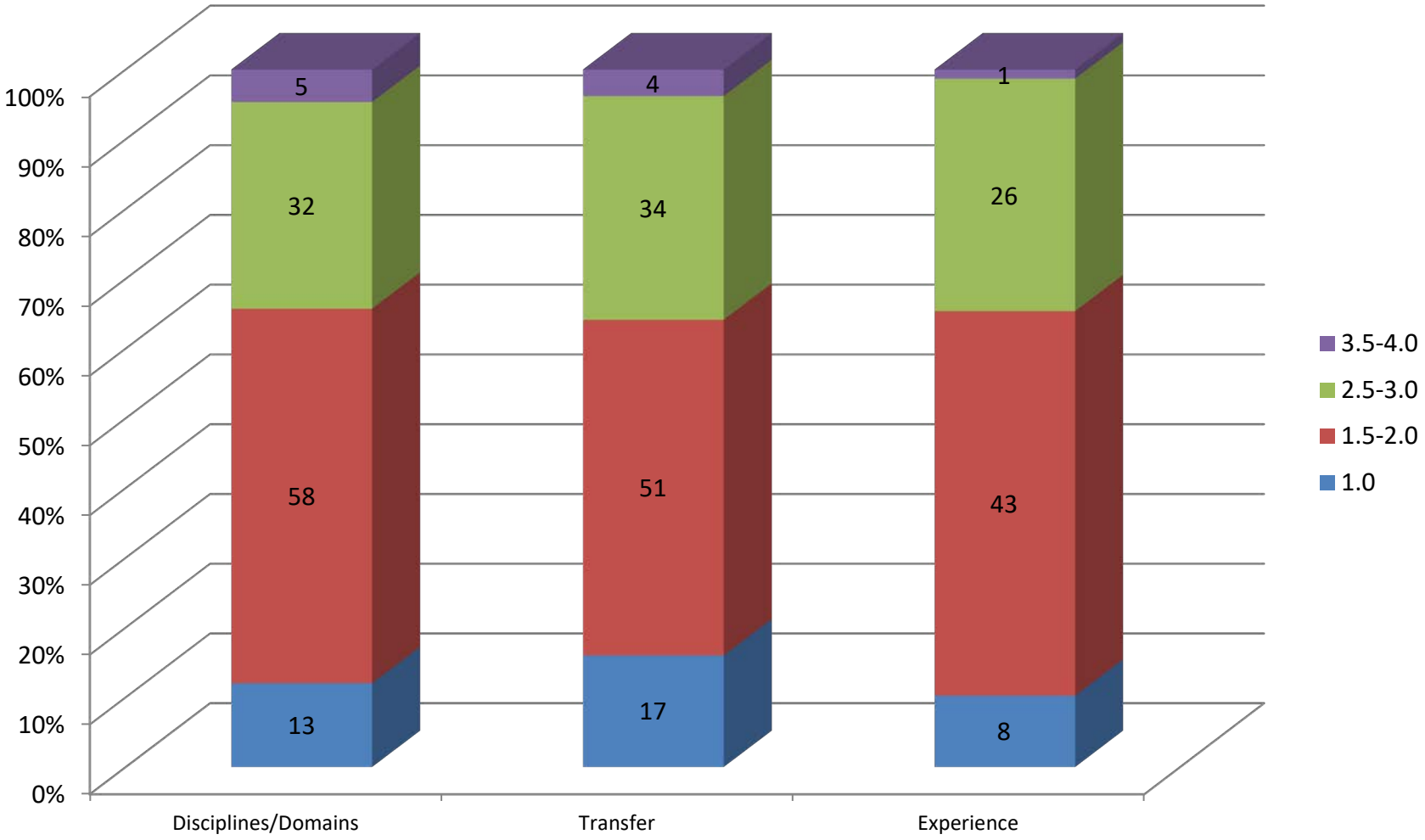
Integrative Thinking

Number of artifacts (with usable scores) scoring at each performance level

Trait/ Performance Level	Disciplines /Domains	Transfer	Experience	Total
1.0	13 (12%)	17 (16%)	8 (10%)	**38 (13%)**
1.5 – 2.0	58 (54%)	51 (48%)	43 (55%)	**152 (52%)**
2.5 – 3.0	32 (30%)	34 (32%)	26 (33%)	**92 (32%)**
3.5 – 4.0	5 (5%)	4 (4%)	1 (1%)	**10 (3%)**
Totals	**108**	**106**	**78**	**292**

Integrative Thinking

Frequency Analysis

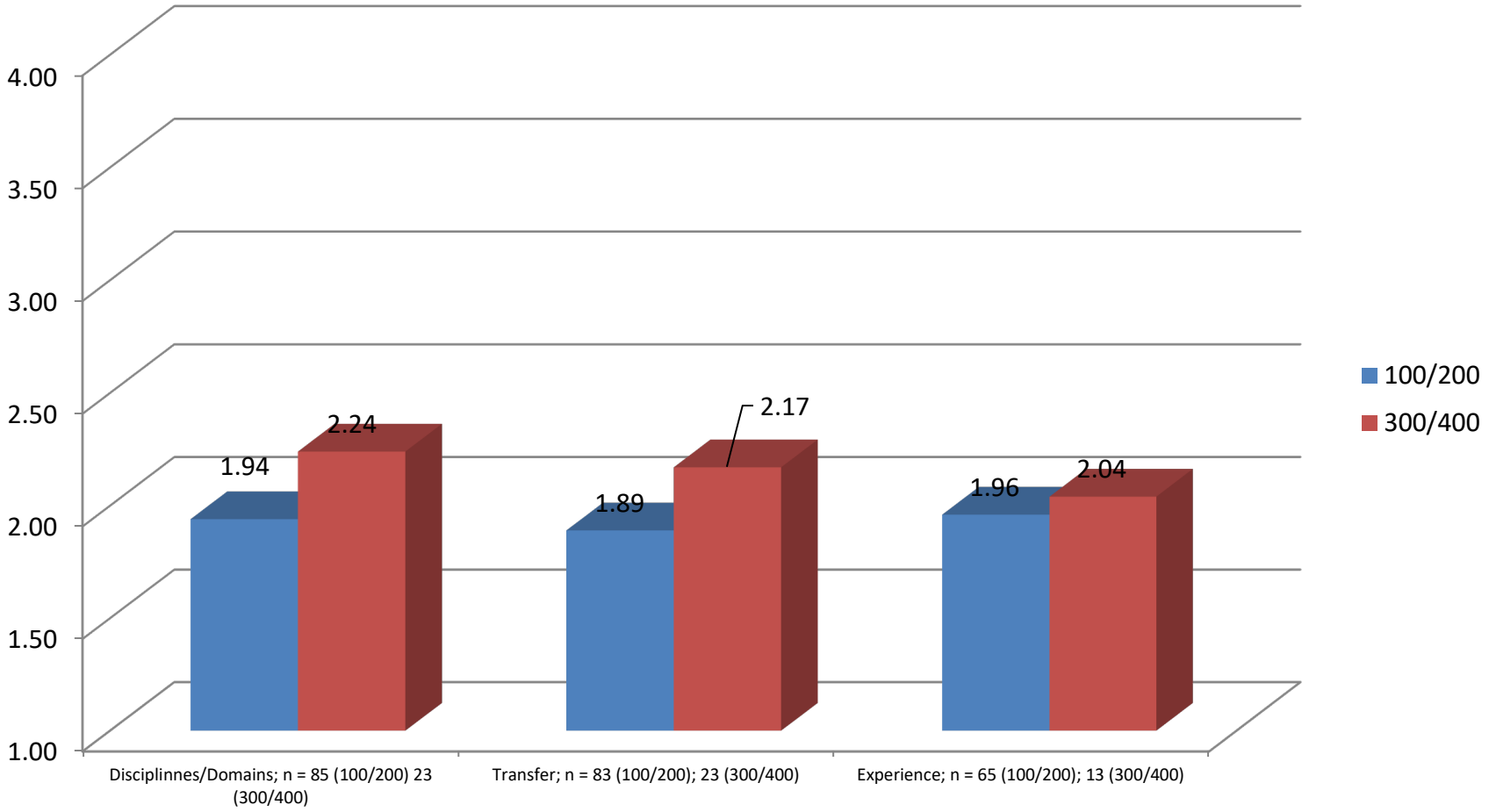


Integrative Thinking: Course Level Analysis

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score

There were no significant differences based on course level.

Course Level Analysis



Integrative Thinking

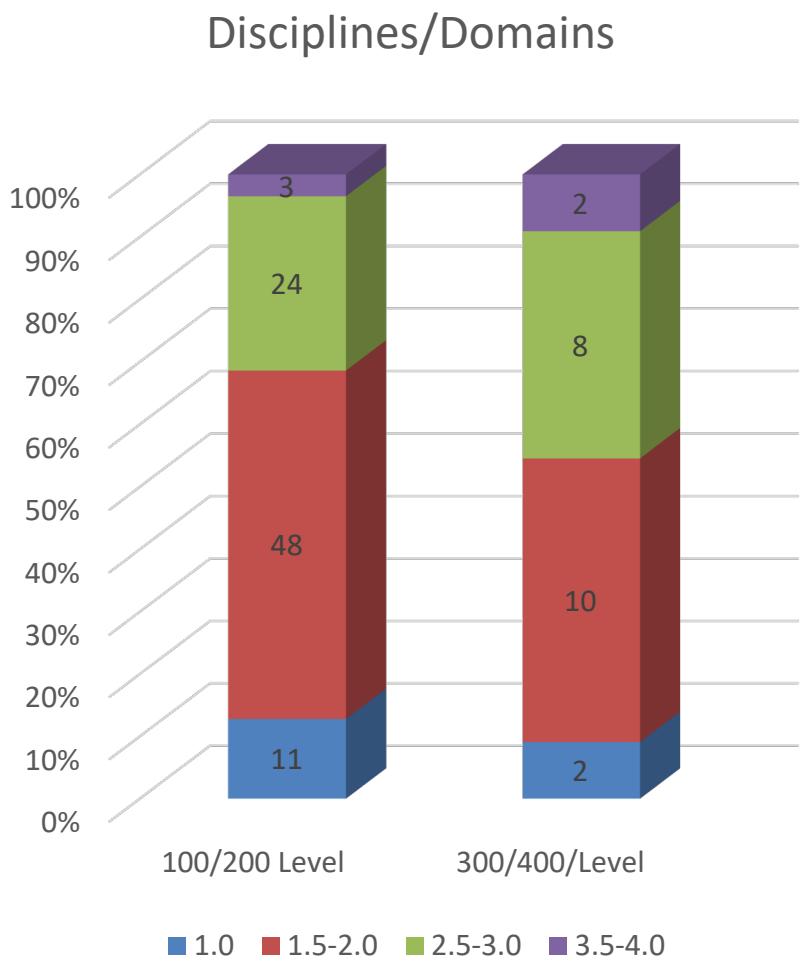
Frequency Analysis by Course Level

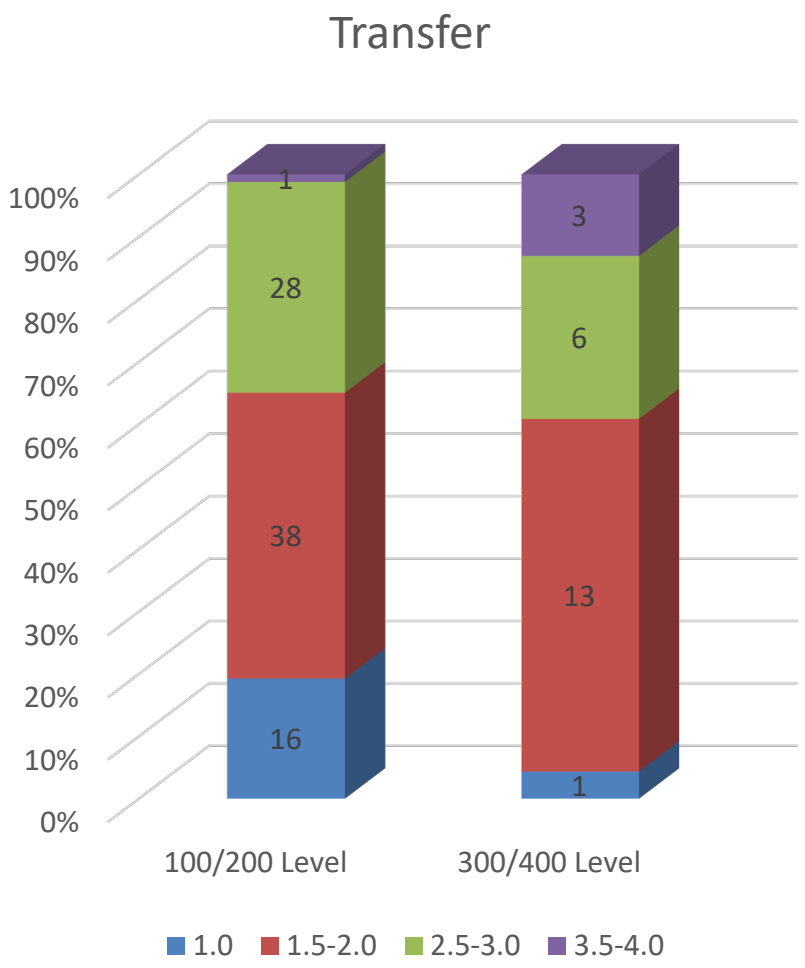
Number of artifacts (with usable scores) scoring at each performance level

Course Level	Trait/ Performance Level	Disciplines/ Domains	Transfer	Experience	Total
100/200	1.0	11 (13%)	16 (19%)	6 (9%)	33 (14%)
300/400		2 (9%)	1 (4%)	2 (15%)	5 (9%)
100/200	1.5 – 2.0	48 (56%)	38 (46%)	38 (58%)	124 (53%)
300/400		10 (45%)	13 (57%)	5 (38%)	28 (48%)
100/200	2.5 – 3.0	24 (28%)	28 (34%)	21 (32%)	73 (31%)
300/400		8 (36%)	6 (26%)	5 (38%)	19 (33%)
100/200	3.5 – 4.0	3 (3%)	1 (1%)	0	4 (2%)
300/400		2 (9%)	3 (13%)	1 (8%)	6 (10%)
100/200	**Totals**	**85**	**83**	**65**	**233**
300/400		**23**	**23**	**13**	**59**
All Course Levels	**Grand Totals**	**108**	**106**	**78**	**292**

Integrative Thinking

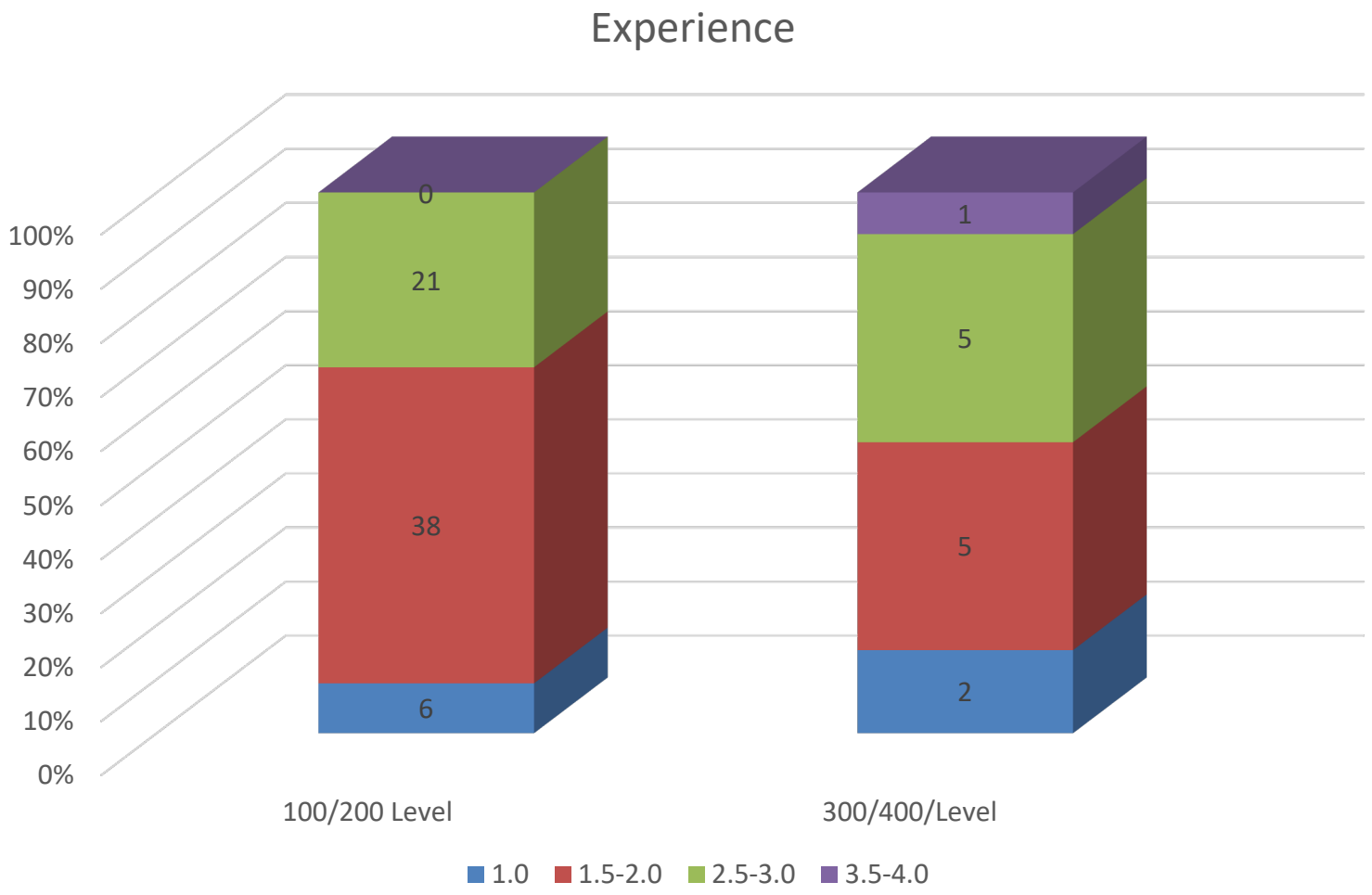
Frequency Analysis by Course Level





Integrative Thinking

Frequency Analysis by Course Level



Integrative Thinking

Inter-Rater Agreement Results

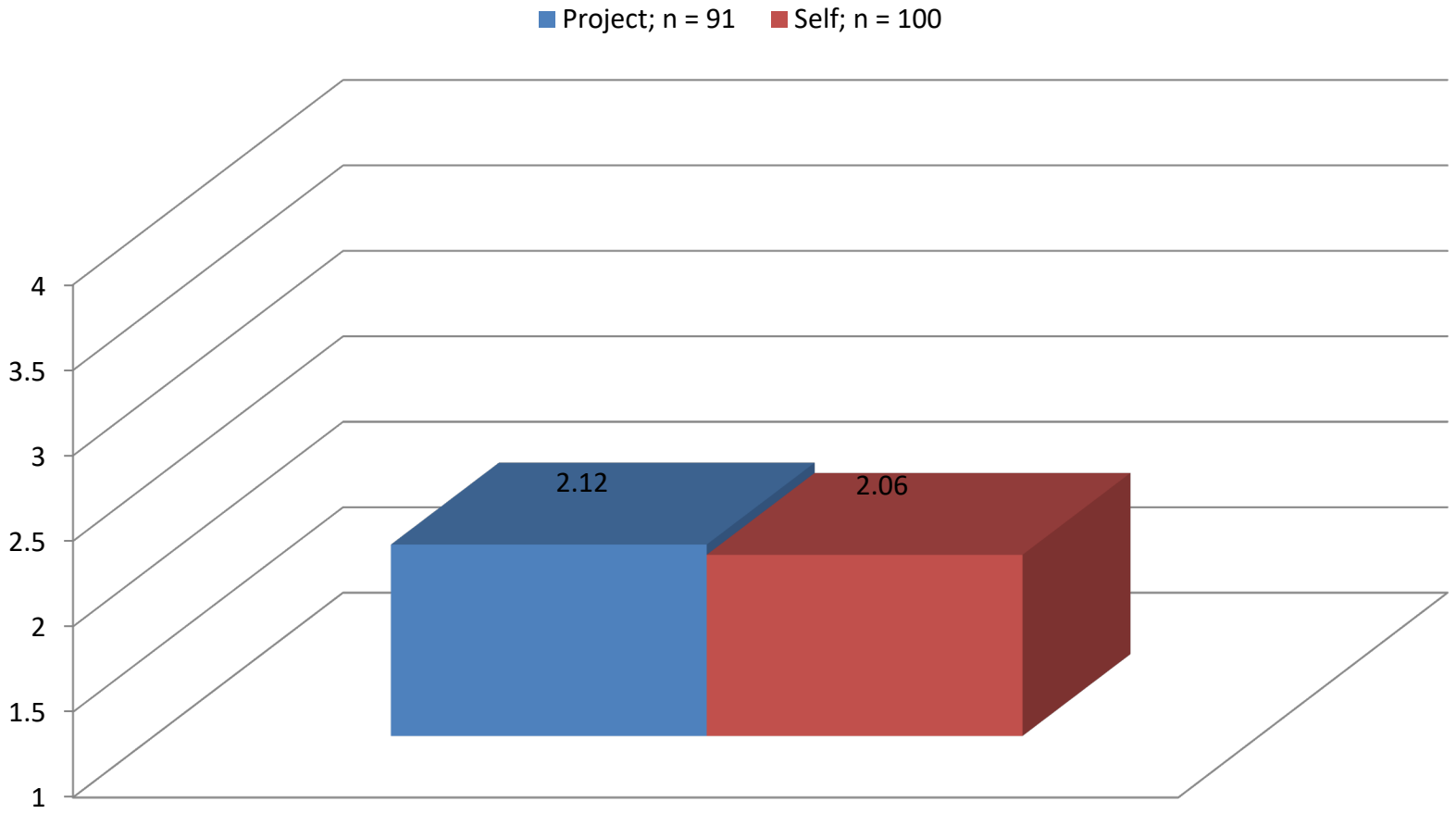
Trait/ Performance Level	Disciplines/Domains Cohen's Kappa (Liberal)= .824	Transfer Cohen's Kappa (Liberal)= .792	Experience Cohen's Kappa (Liberal)= .647
Agree on score	45 (40%)	40 (36%)	39 (35%)
Difference = 1 point	51 (46%)	53 (47%)	51 (46%)
Difference = 2 points	16 (14%)	19 (17%)	20 (18%)
Difference = 3 points	0	0	2 (2%)
Total	112	112	112

Metacognitive Thinking

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score

(Although there were 100 artifacts in the analysis, not all artifacts aligned to every trait)
There is no significance difference between traits.

Overall Analysis



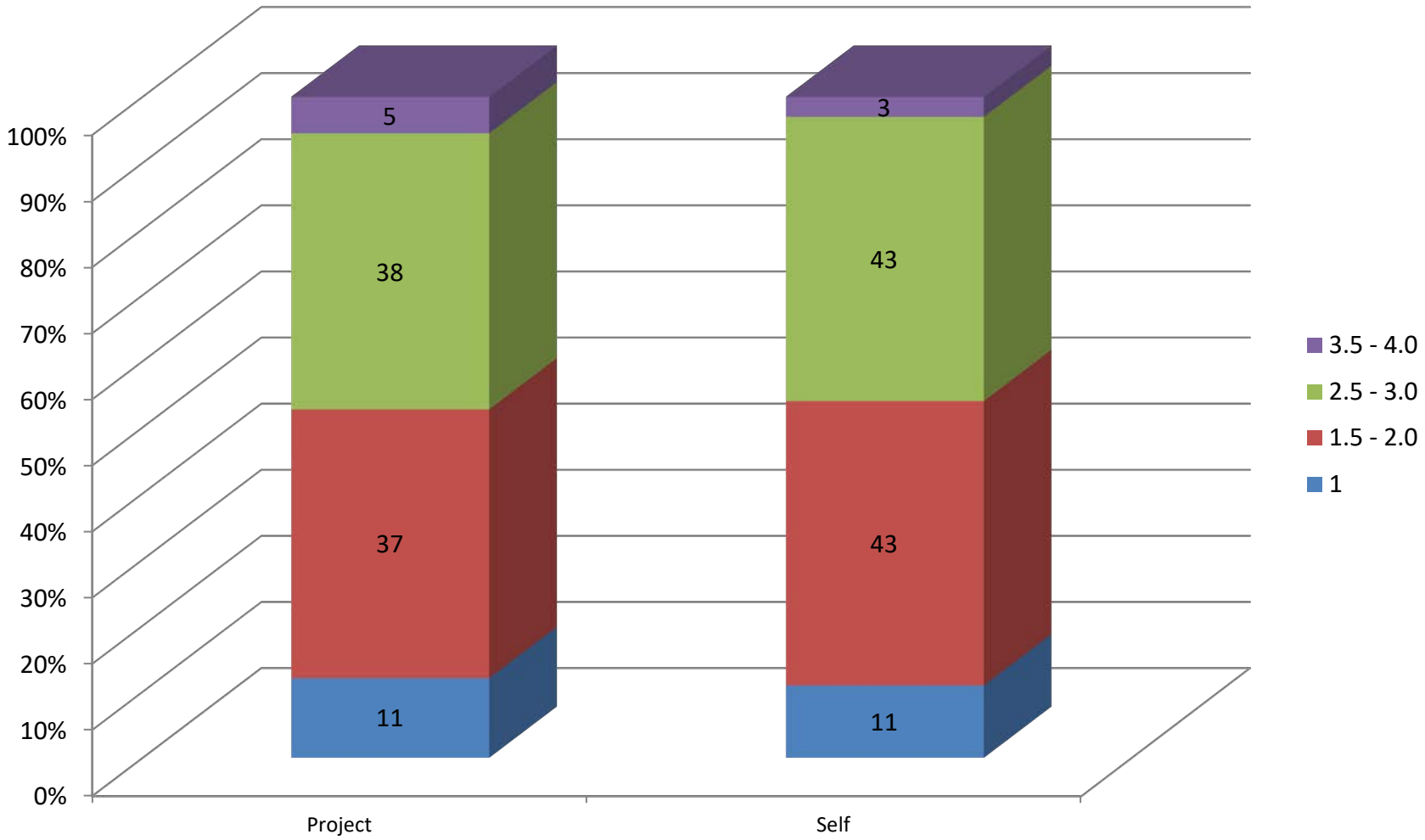
Metacognitive Thinking

Number of artifacts (with usable scores) scoring at each performance level

Trait/ Performance Level	Project Management	Self-Evaluation	Total
1.0	11 (12%)	11 (11%)	22 (12%)
1.5 – 2.0	37 (41%)	43 (43%)	80 (42%)
2.5 – 3.0	38 (42%)	43 (43%)	81 (42%)
3.5 – 4.0	5 (5%)	3 (3%)	8 (4%)
Totals	**91**	**100**	**191**

Metacognitive Thinking

Frequency Analysis

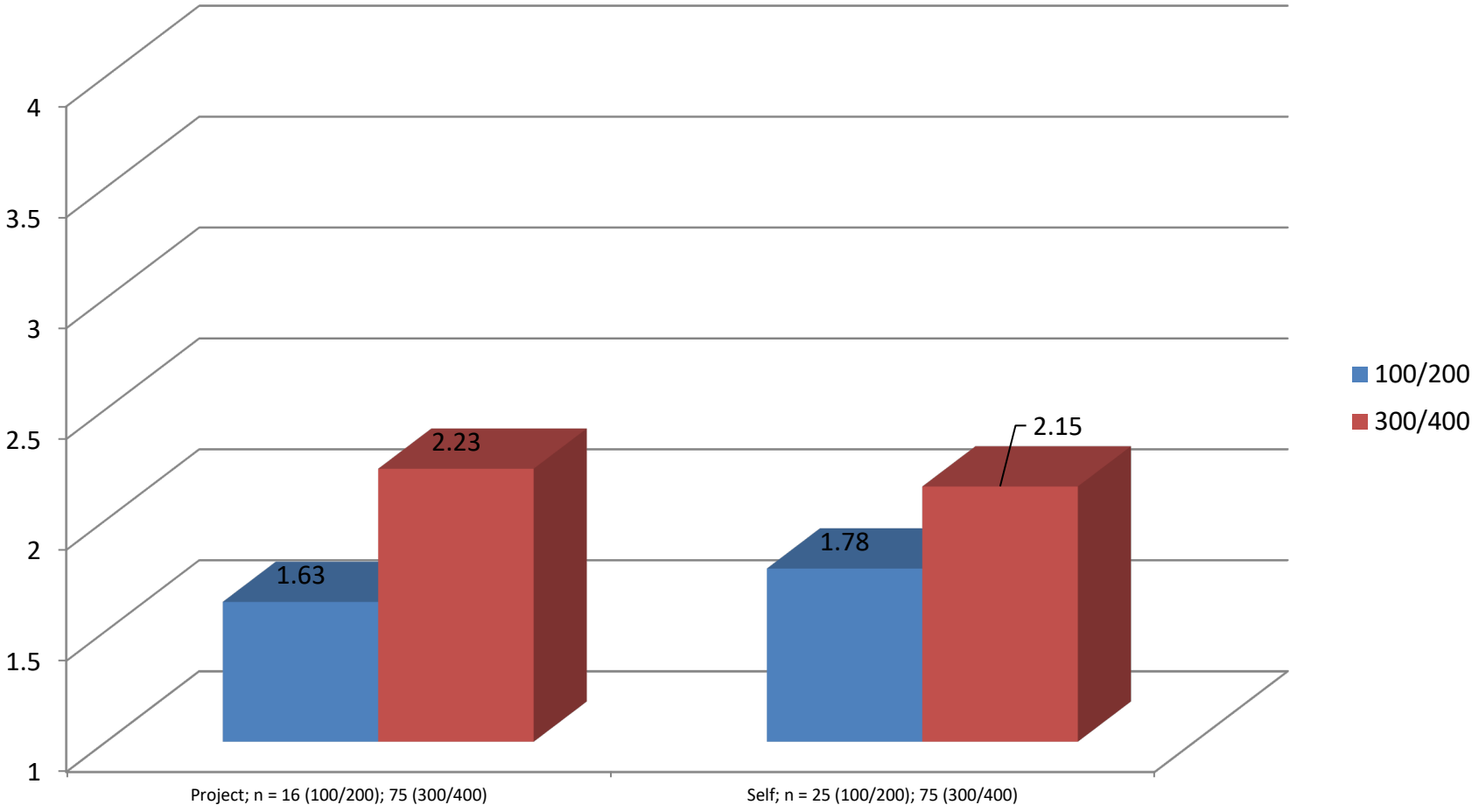


Metacognitive Thinking

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score

Means for 300/400 level courses were significantly higher than those for 100/200 level courses for both Project Management and Self-Evaluation.

Course Level Analysis



Metacognitive Thinking

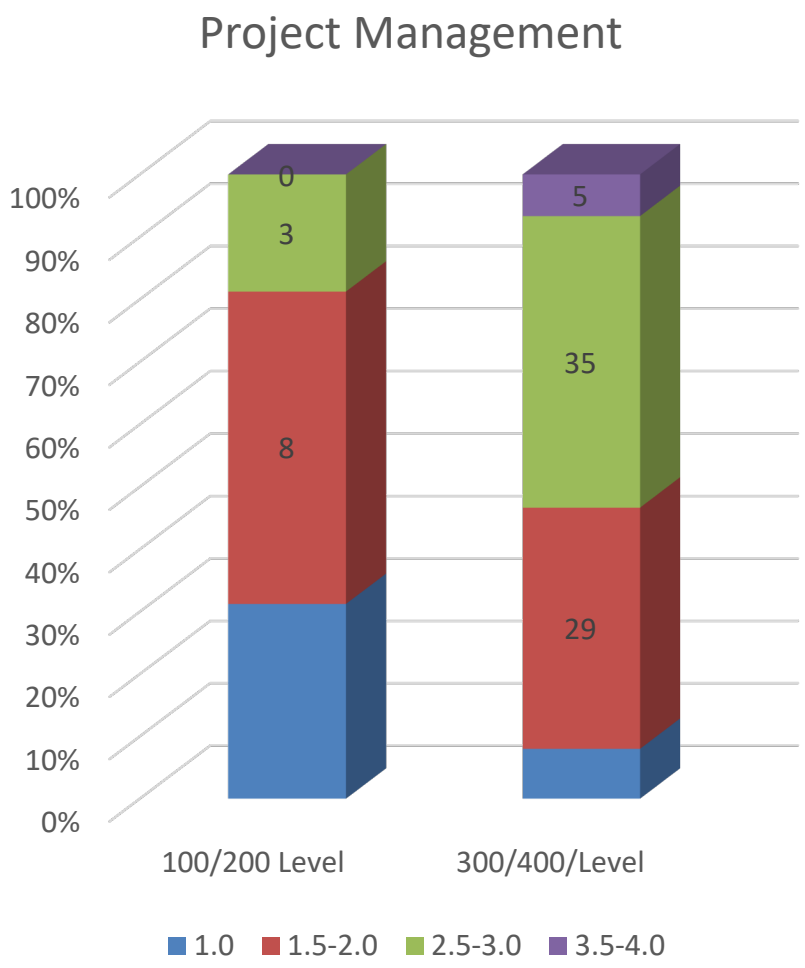
Frequency Analysis by Course Level

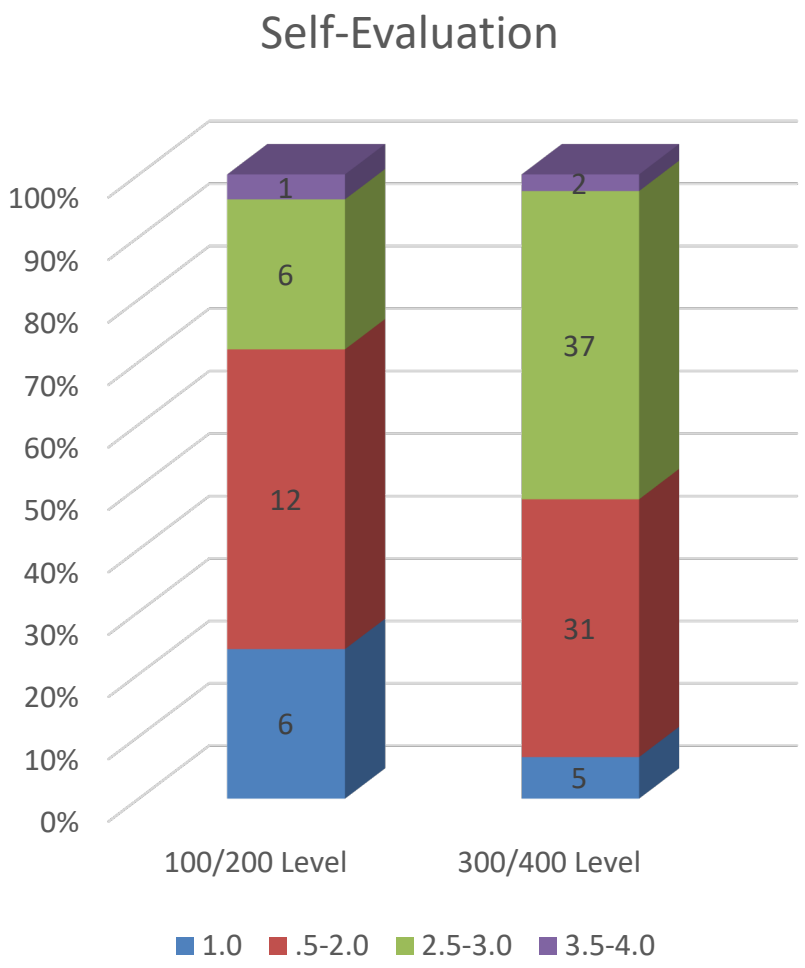
Number of artifacts (with usable scores) scoring at each performance level

Course Level	Trait/ Performance Level	Project Management	Self-Evaluation	Total
100/200	1.0	5 (31%)	6 (24%)	11 (27%)
300/400		6 (8%)	5 (7%)	11 (7%)
100/200	1.5 – 2.0	8 (50%)	12 (48%)	20 (49%)
300/400		29 (39%)	31 (41%)	60 (40%)
100/200	2.5 – 3.0	3 (19%)	6 (24%)	9 (22%)
300/400		35 (47%)	37 (49%)	72 (48%)
100/200	3.5 – 4.0	0	1 (4%)	1 (2%)
300/400		5 (7%)	2 (3%)	7 (5%)
100/200	**Total Tags with Usable Scores**	**16**	**25**	**41**
300/400		**75**	**75**	**150**
All Course Levels	**Grand Totals**	**91**	**100**	**191**

Metacognitive Thinking

Frequency Analysis by Course Level





Metacognitive Thinking

Inter-Rater Agreement Results

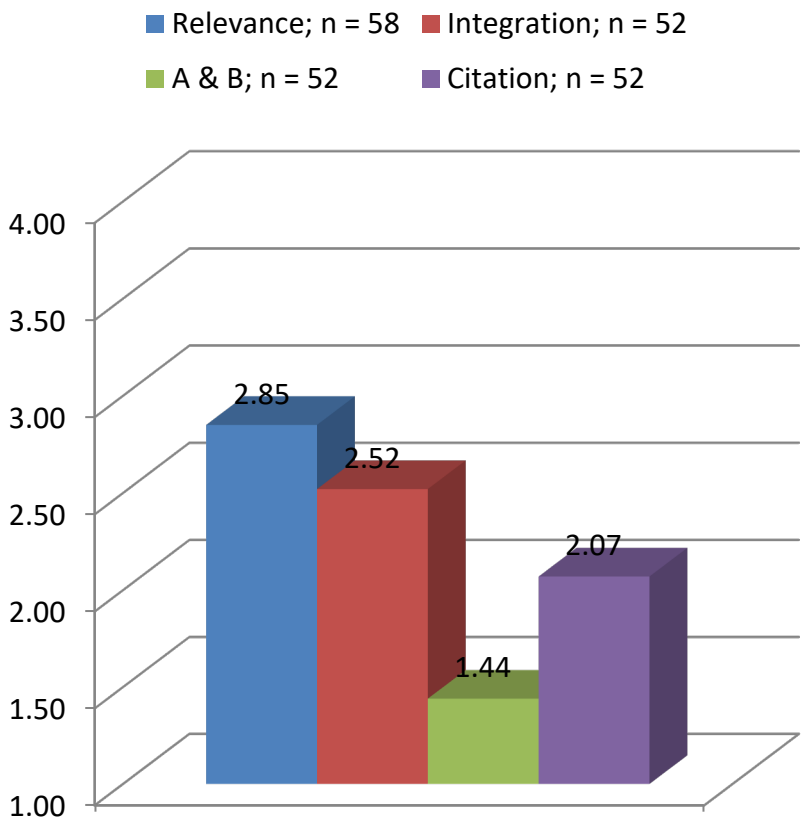
Trait/ Performance Level	Project Management Cohen's Kappa (Liberal) = .880	Self-Evaluation Cohen's Kappa (Liberal) = .801
Agree on score	46 (46%)	32 (32%)
Difference = 1 point	44 (44%)	52 (52%)
Difference = 2 points	10 (10%)	14 (14%%)
Difference = 3 points	0	2 (2%)
Total	**112**	**112**

Course Type Analysis

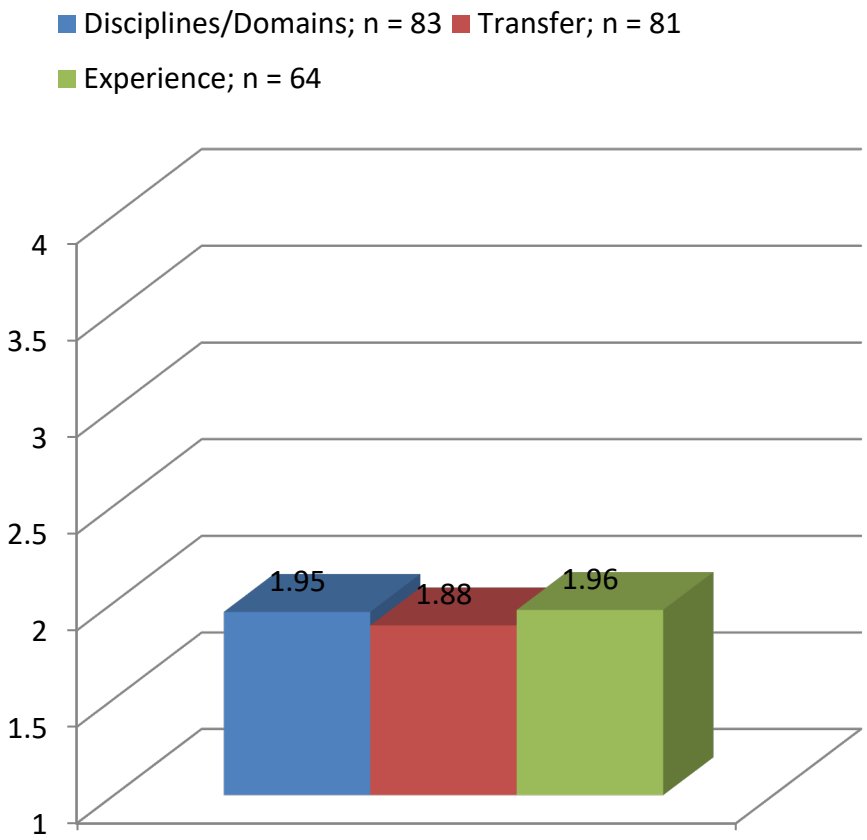
CT Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. All CT courses are 100/200 Level.

Information Literacy



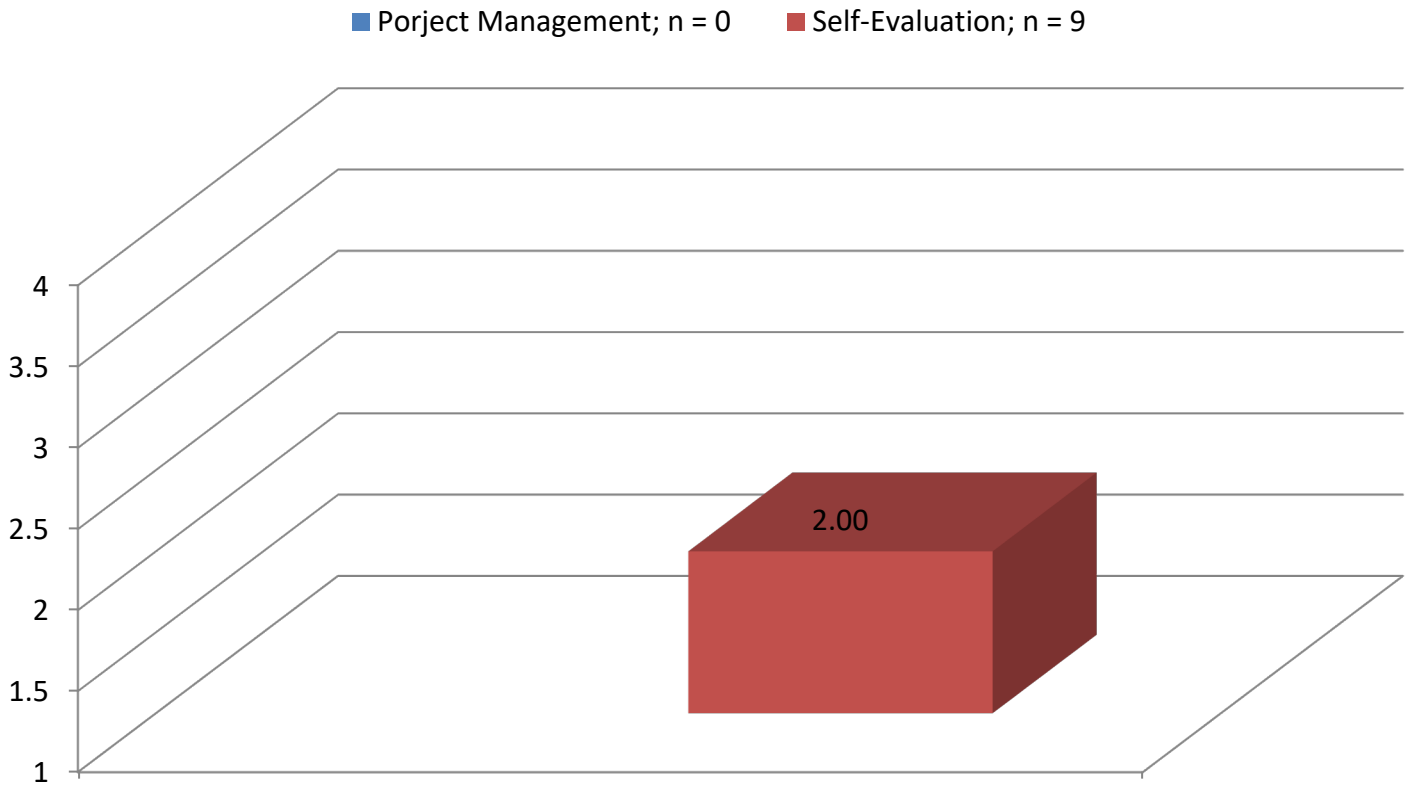
Integrative Thinking



CT Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. All CT courses are 100/200 Level.

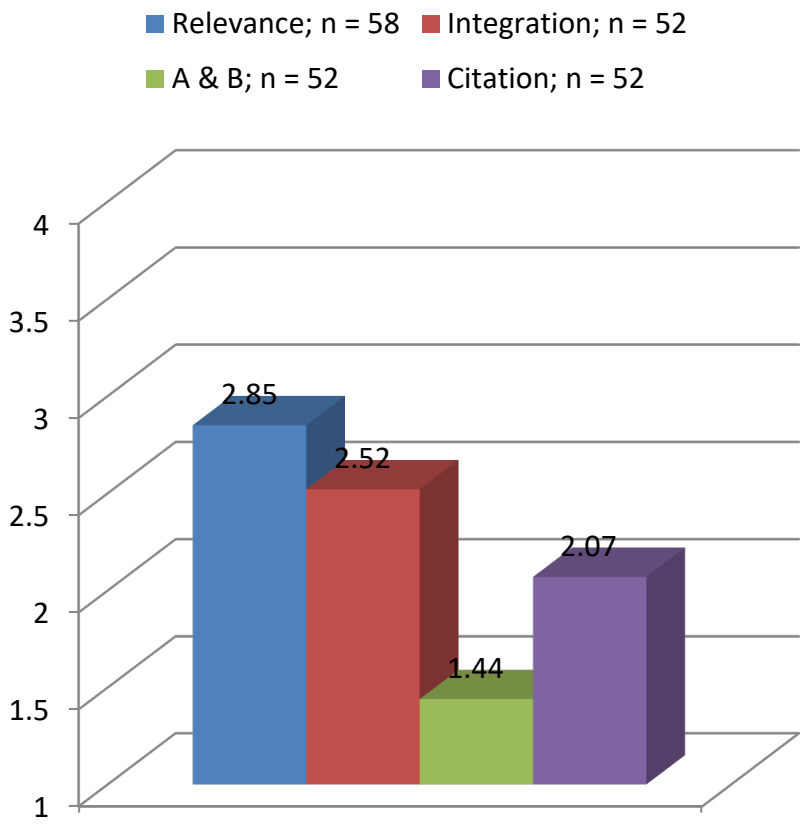
Metacognitive Thinking



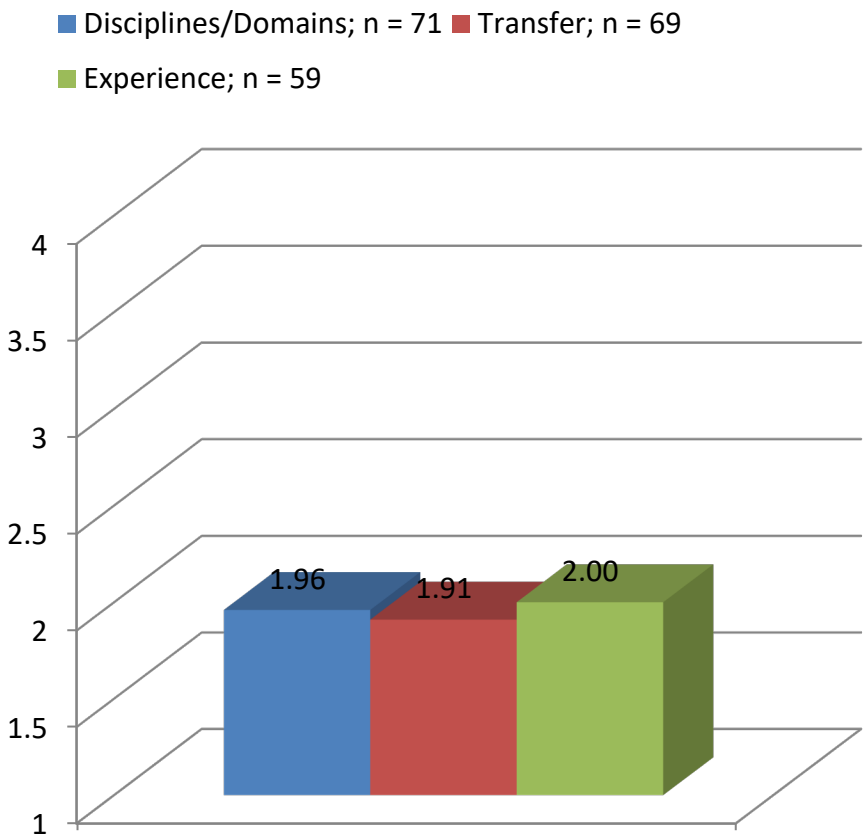
Core II Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. All Core II courses are 100/200 Level.

Information Literacy



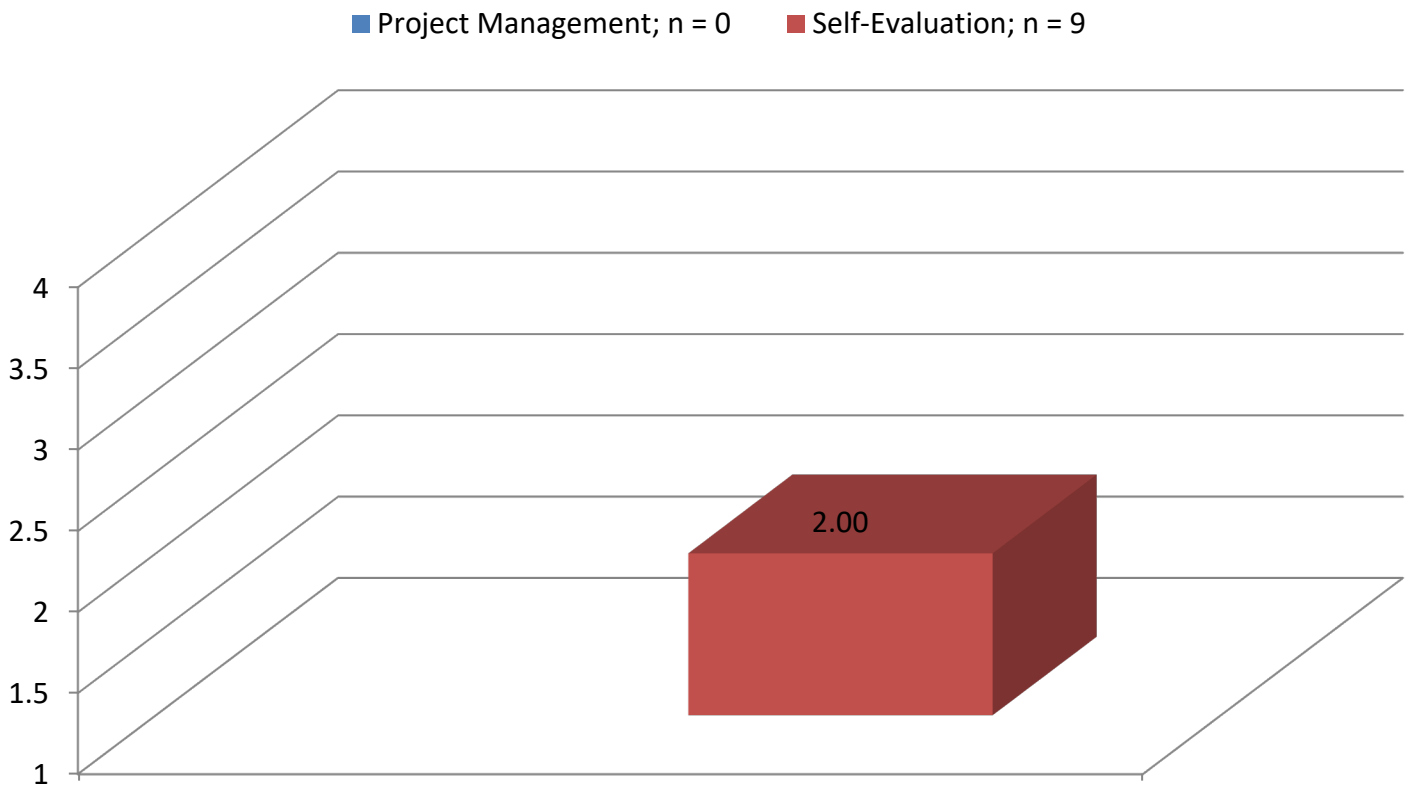
Integrative Thinking



Core II Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. All Core II courses are 100/200 Level.

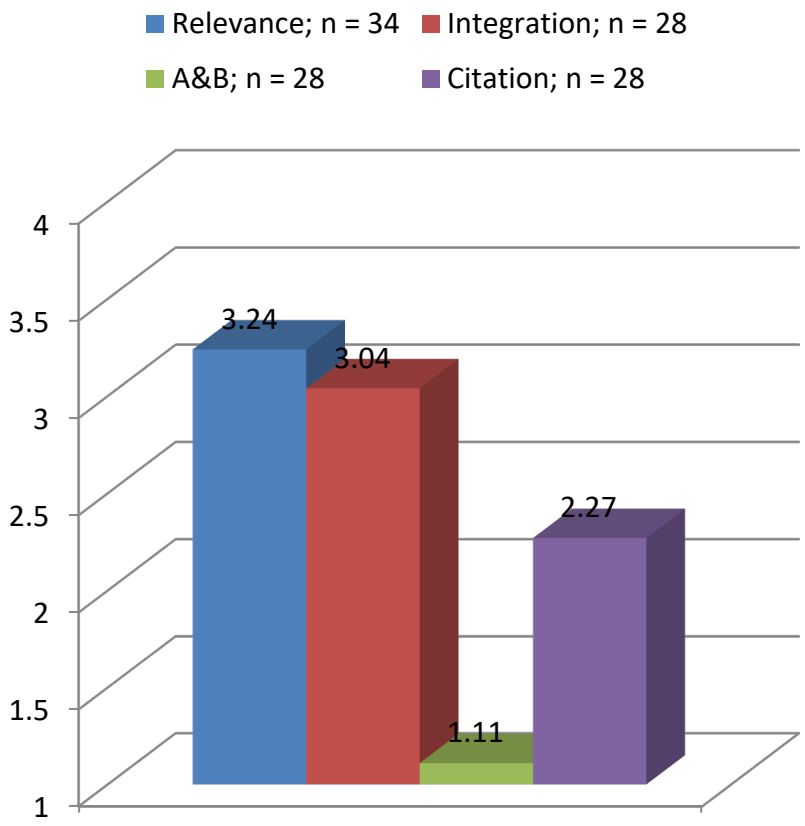
Metacognitive Thinking



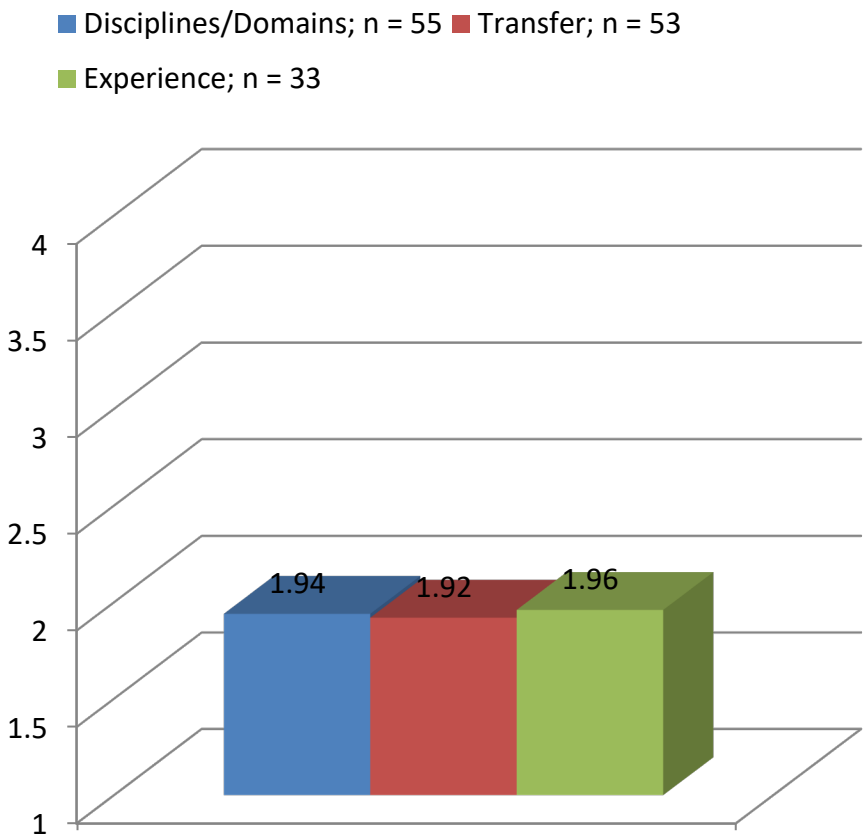
Writing Intensive Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

Information Literacy



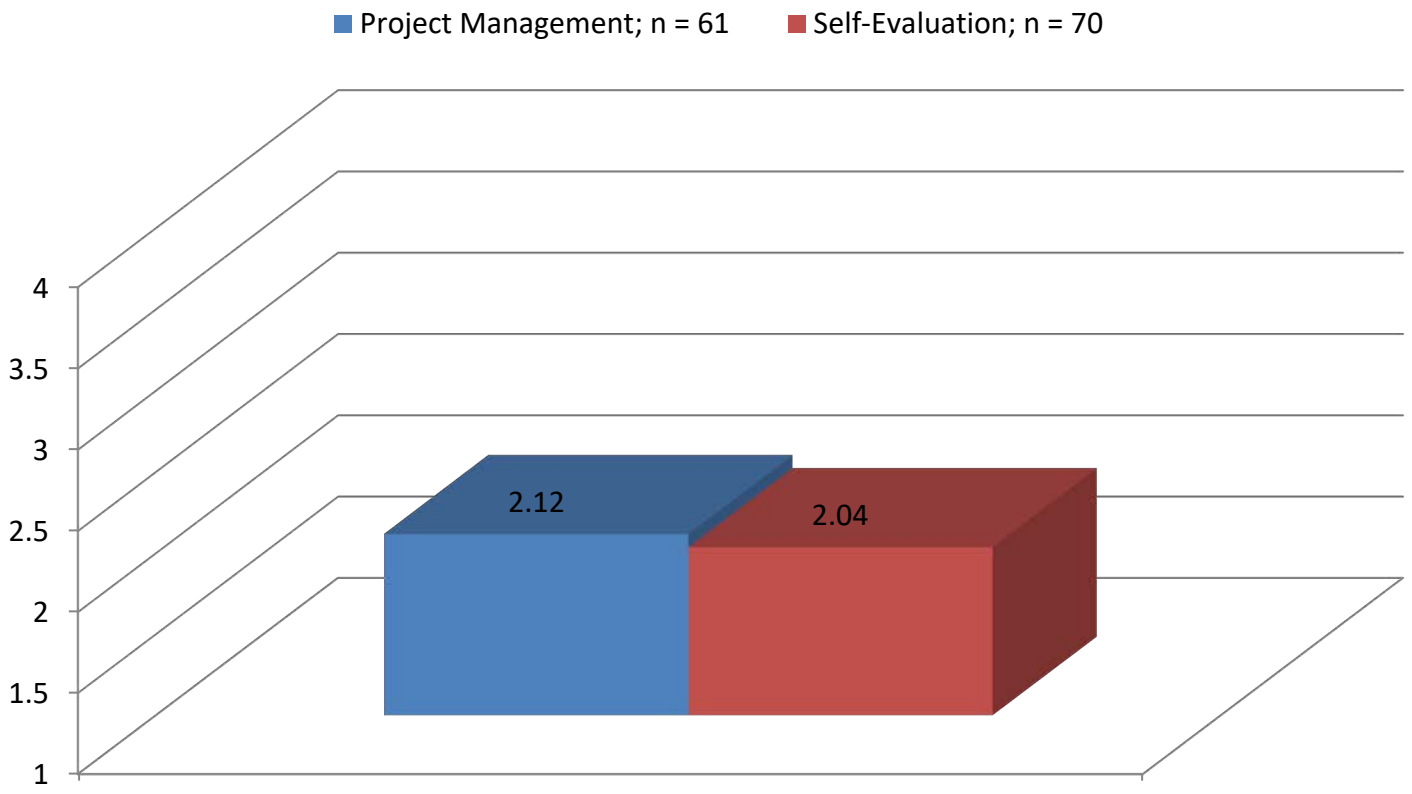
Integrative Thinking



Writing Intensive Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

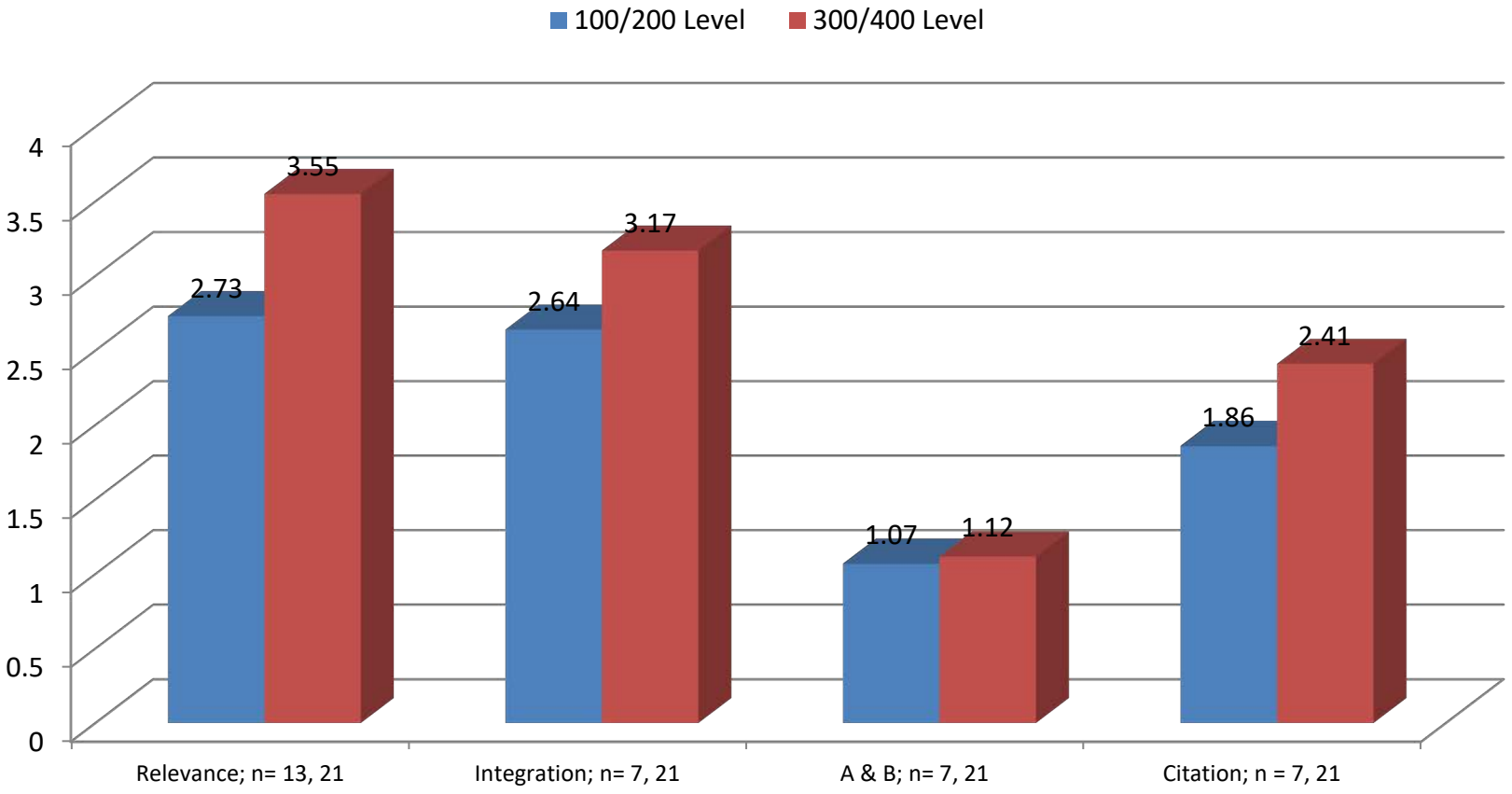
Metacognitive Thinking



Writing Intensive Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

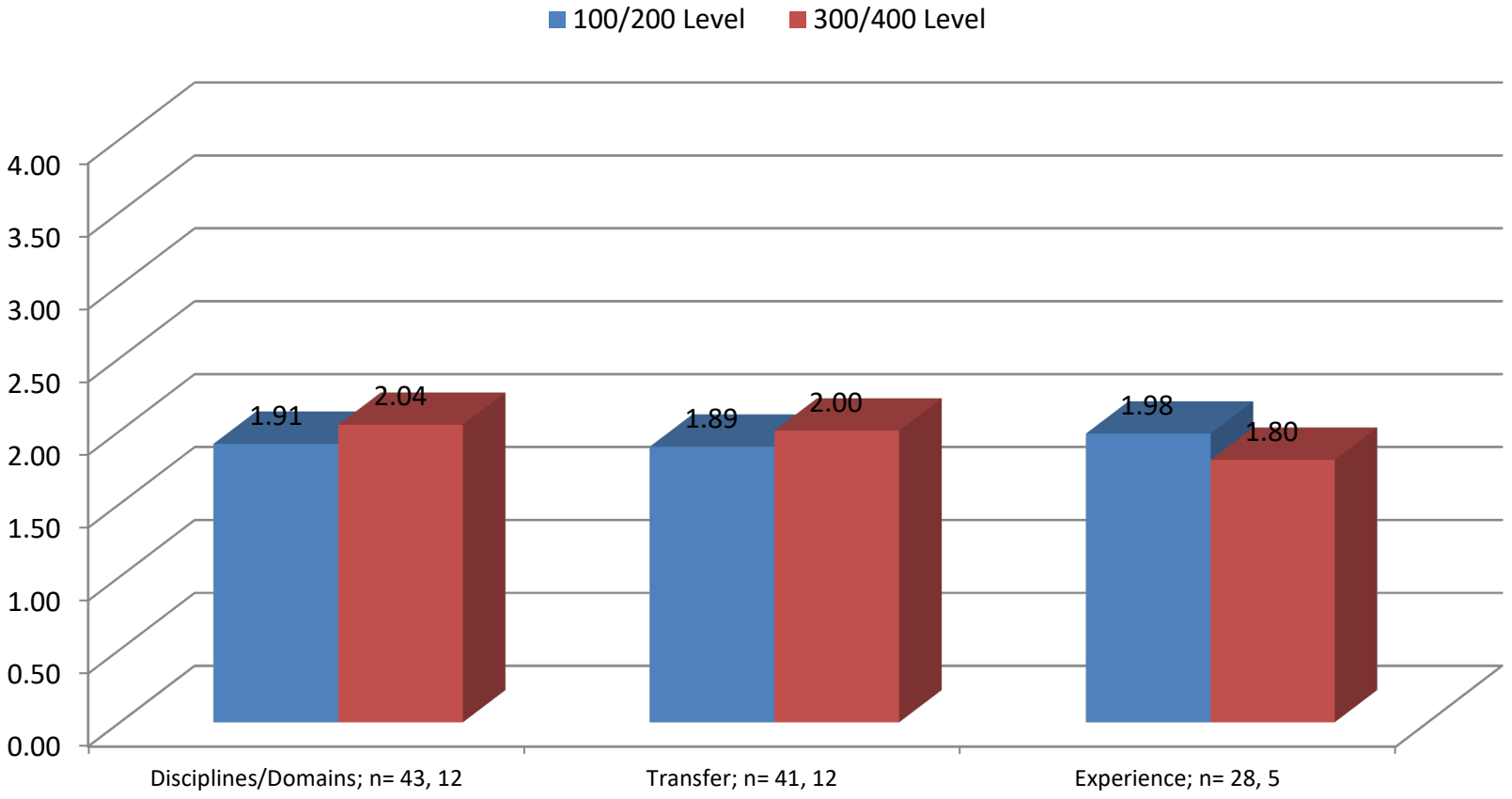
Information Literacy



Writing Intensive Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

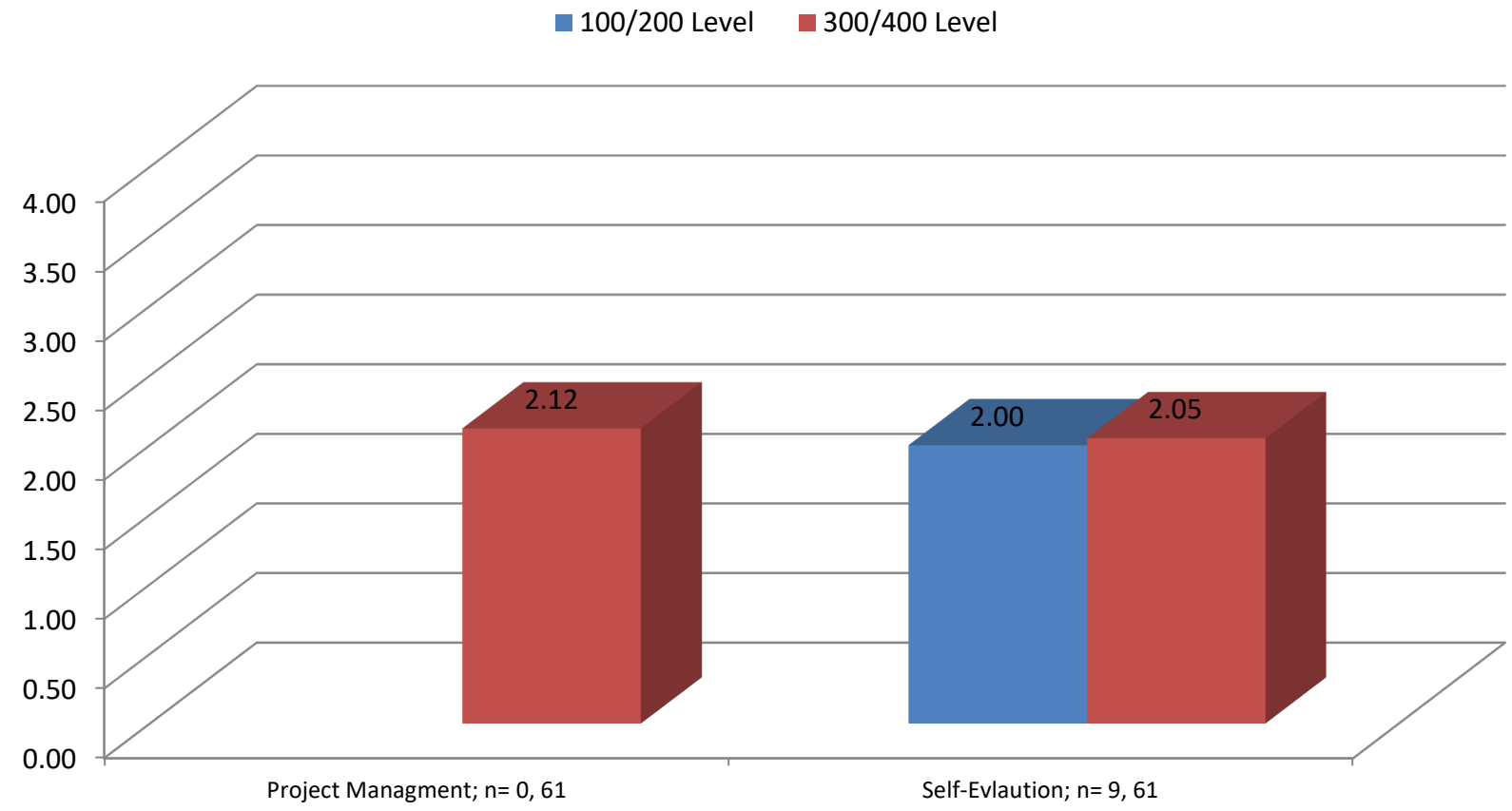
Integrative Thinking



Writing Intensive Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

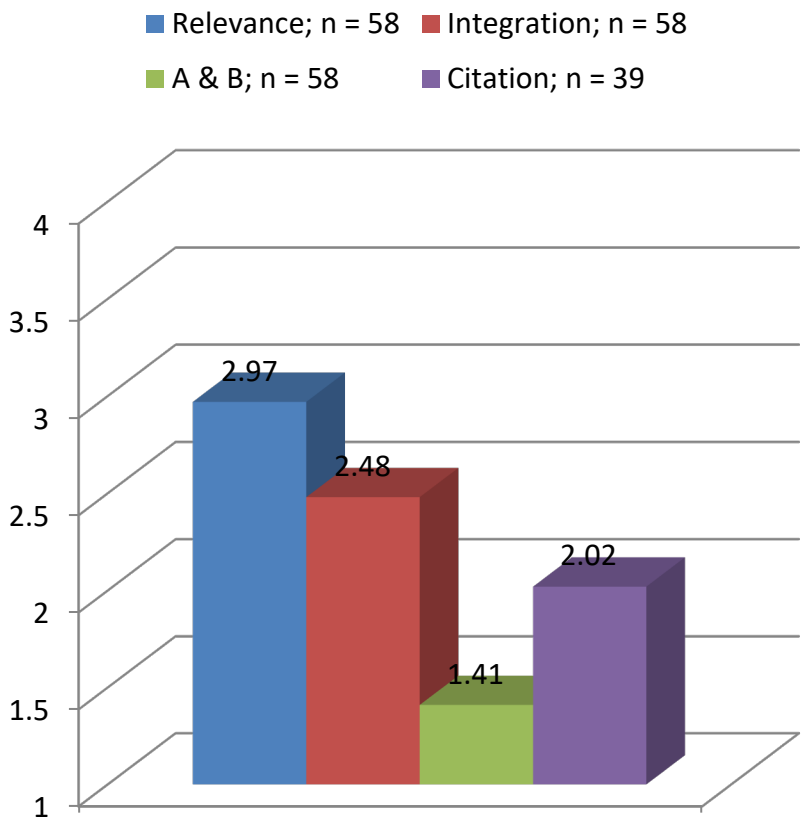
Metacognitive Thinking



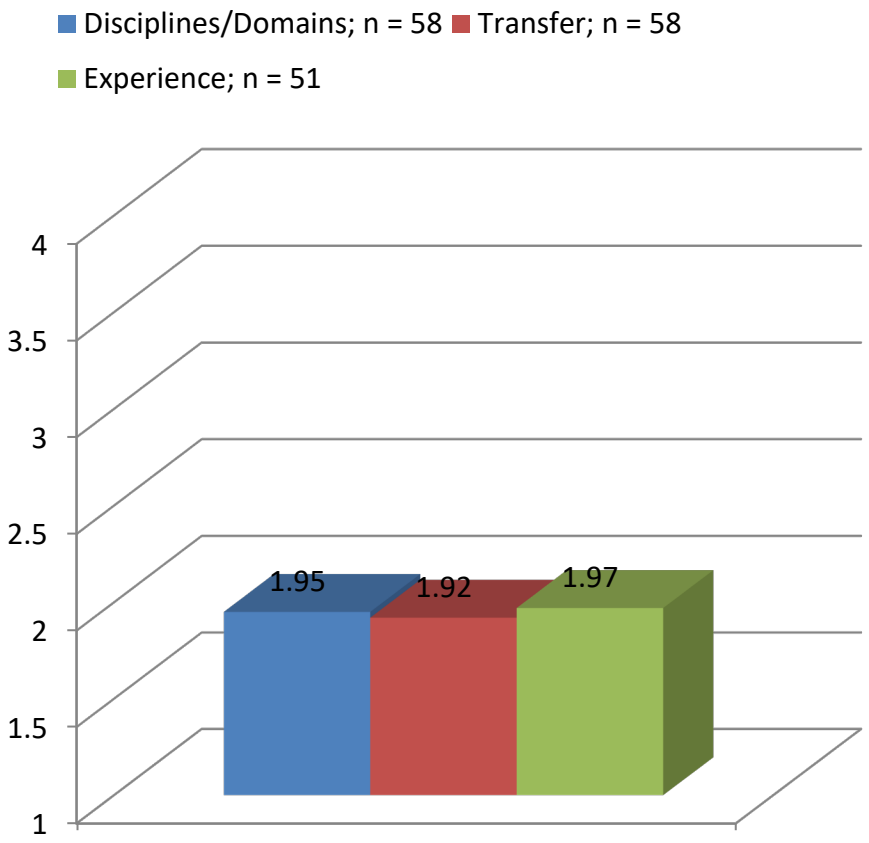
Multicultural Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

Information Literacy



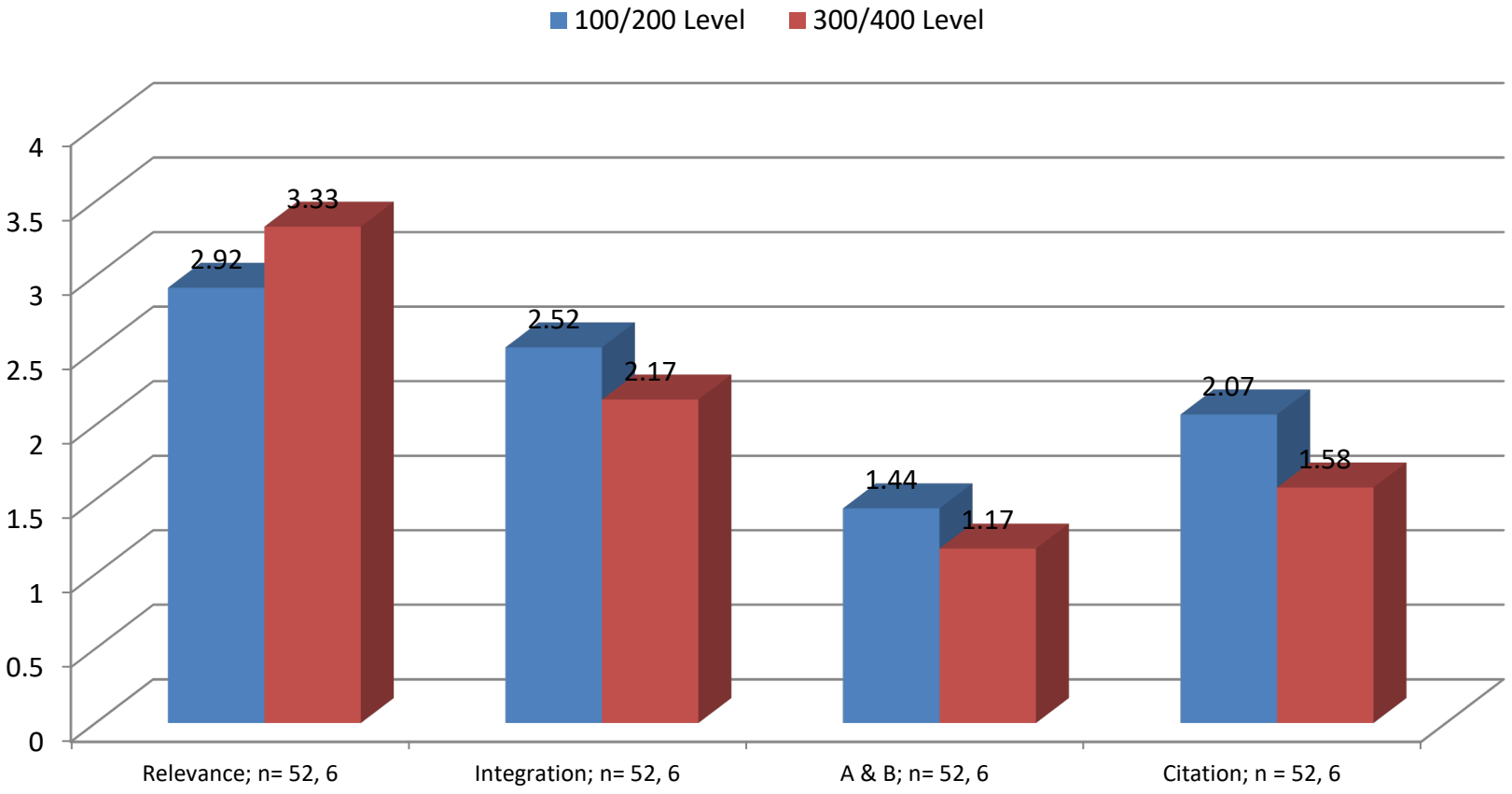
Integrative Thinking



Multicultural Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

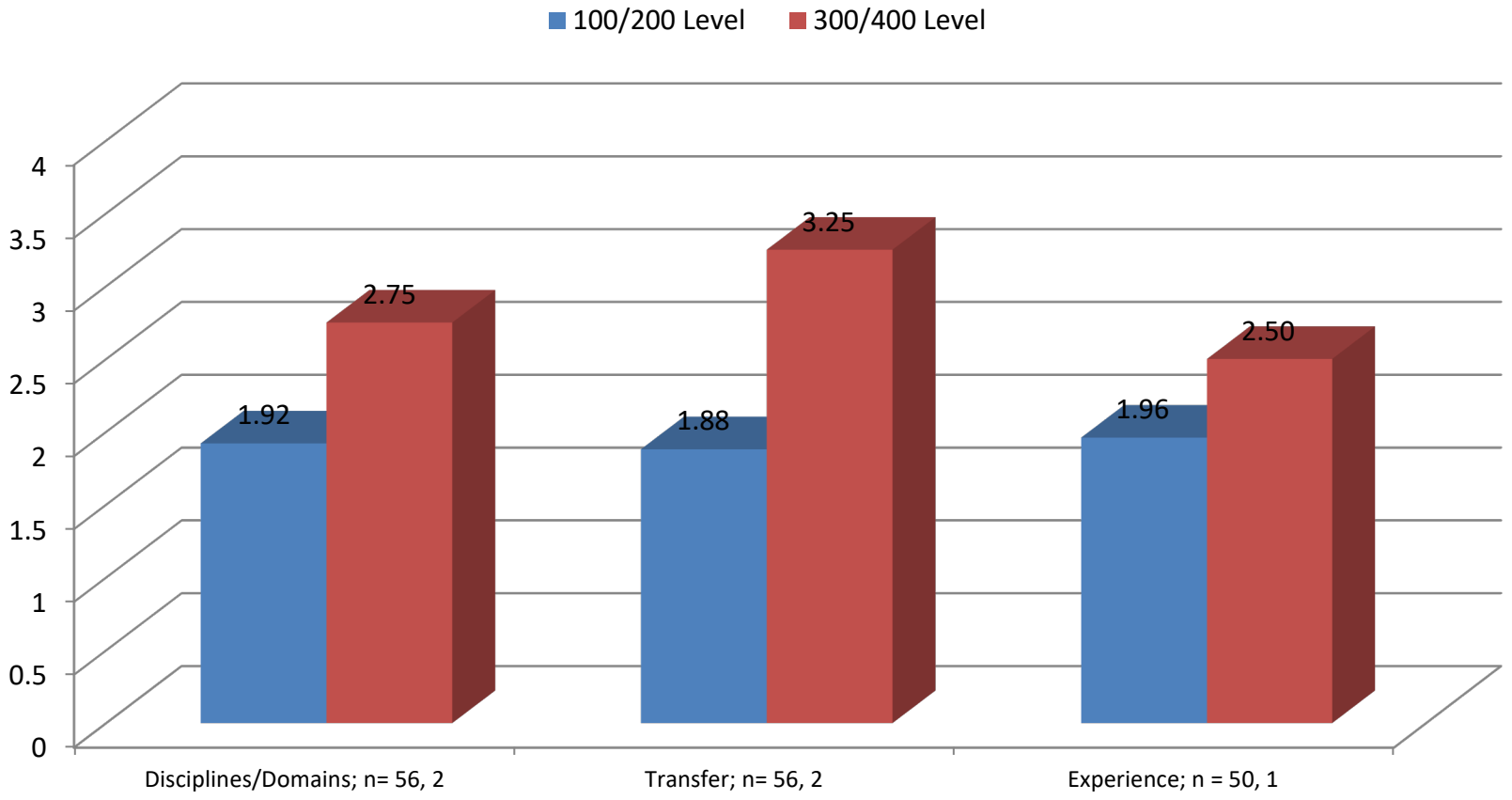
Information Literacy



Multicultural Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

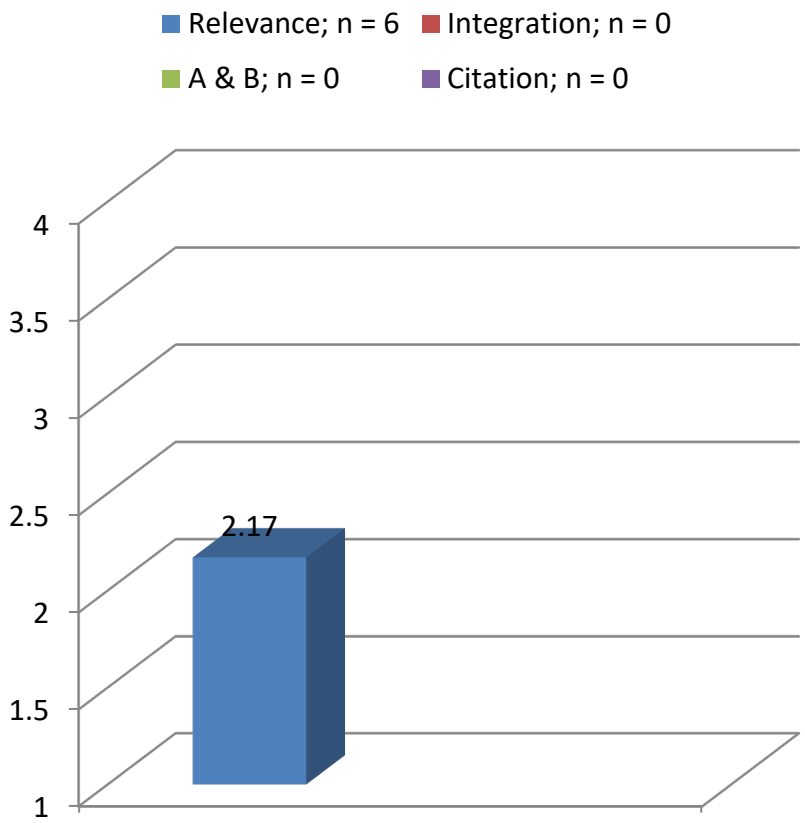
Integrative Thinking



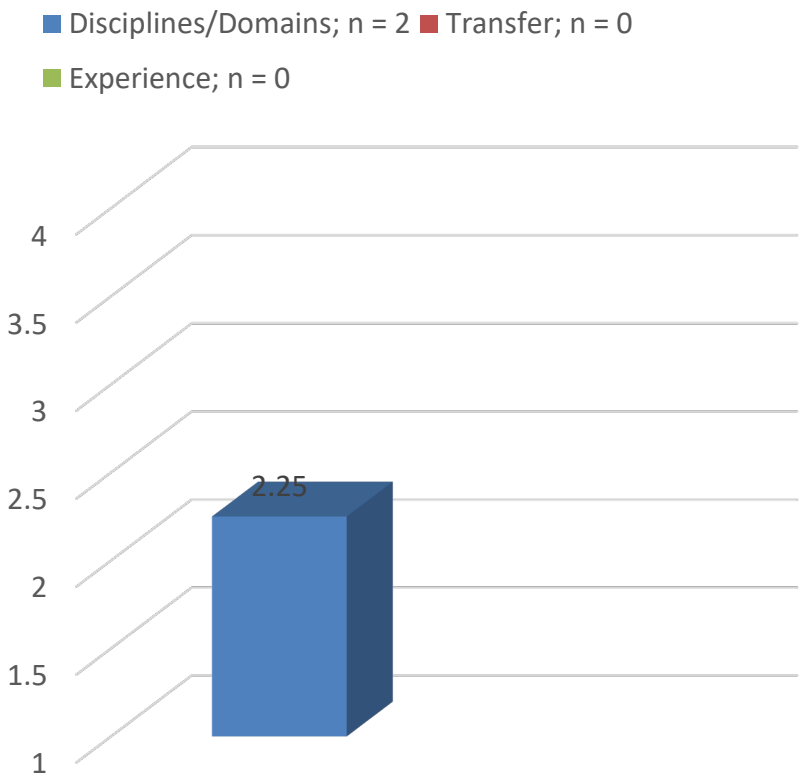
International Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. All international courses were at the 200 level.

Information Literacy



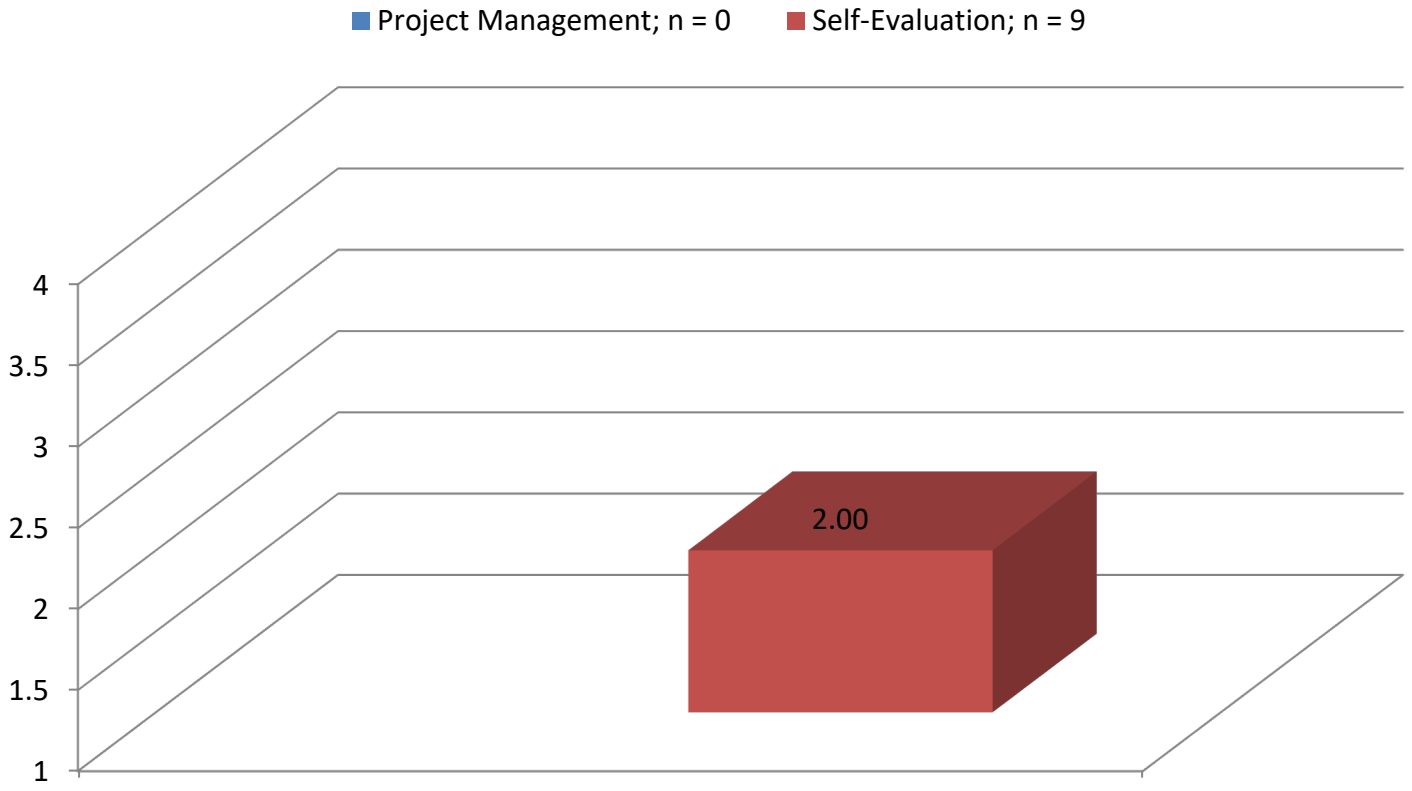
Integrative Thinking



International Courses

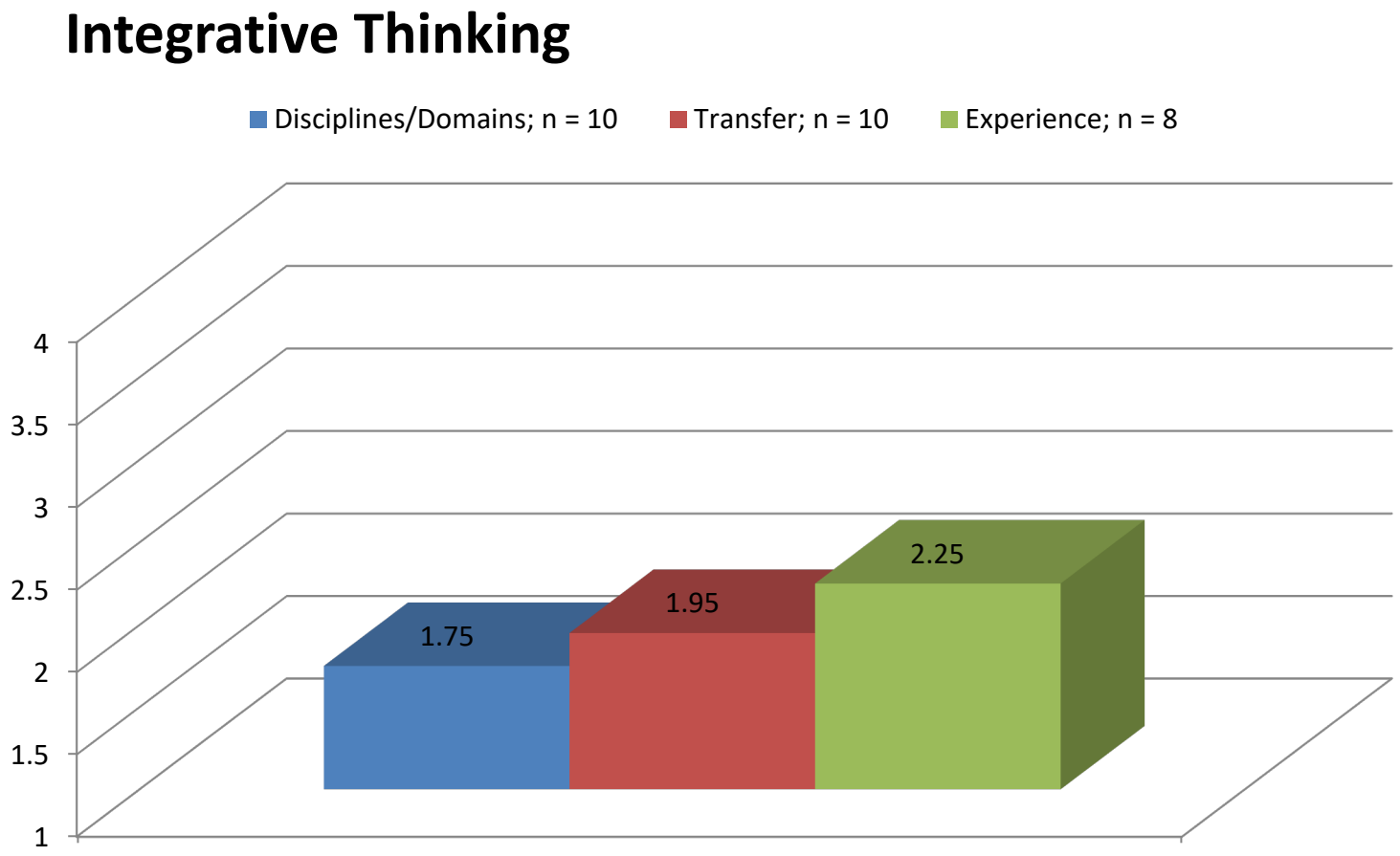
Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

Metacognitive Thinking



Honors Courses

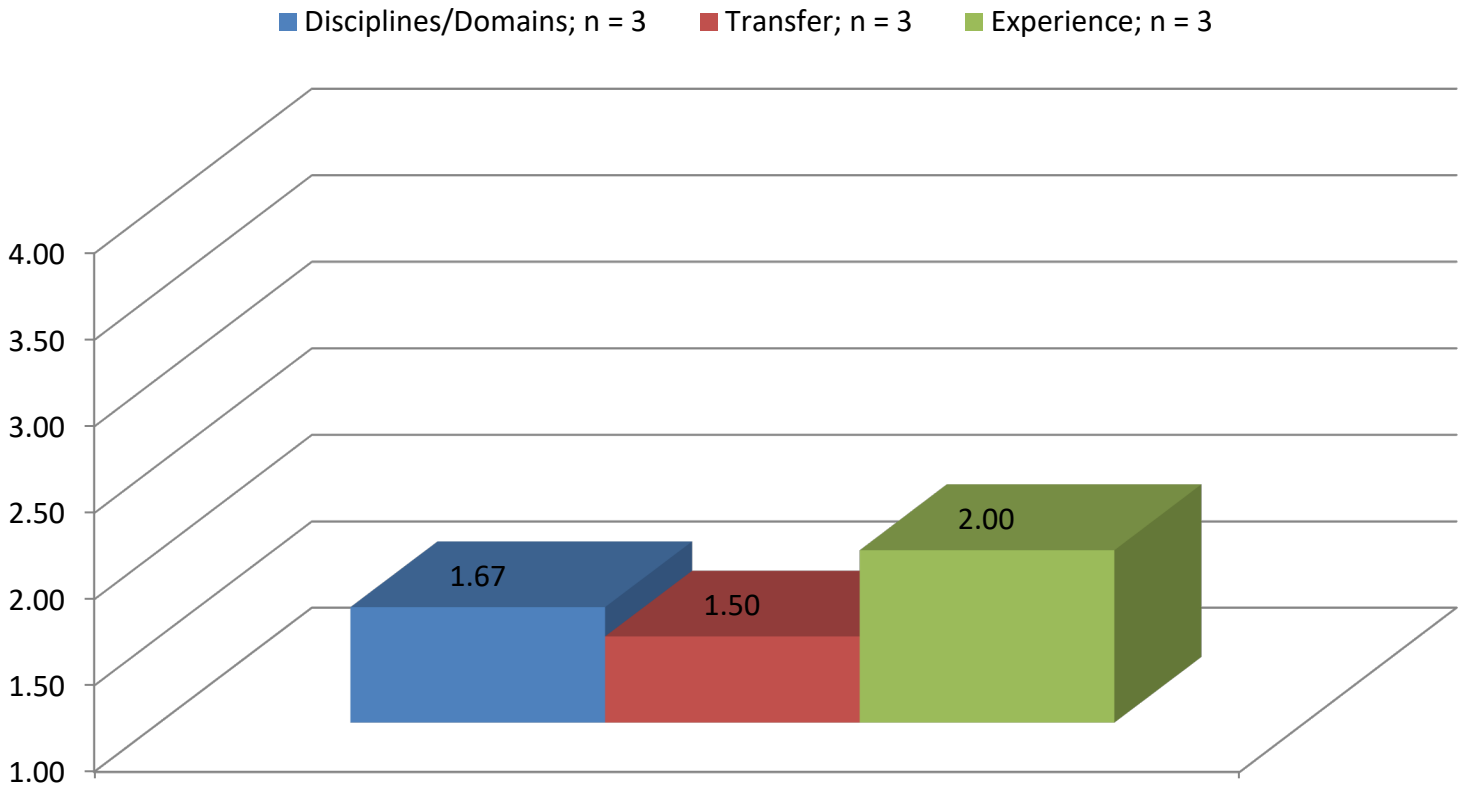
Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. Please note that all Honors courses aligned to *Integrative Thinking* were at the 100/200 level.



Community-Based Learning Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. Please not that the three Community Based Learning courses were at the 300 level.

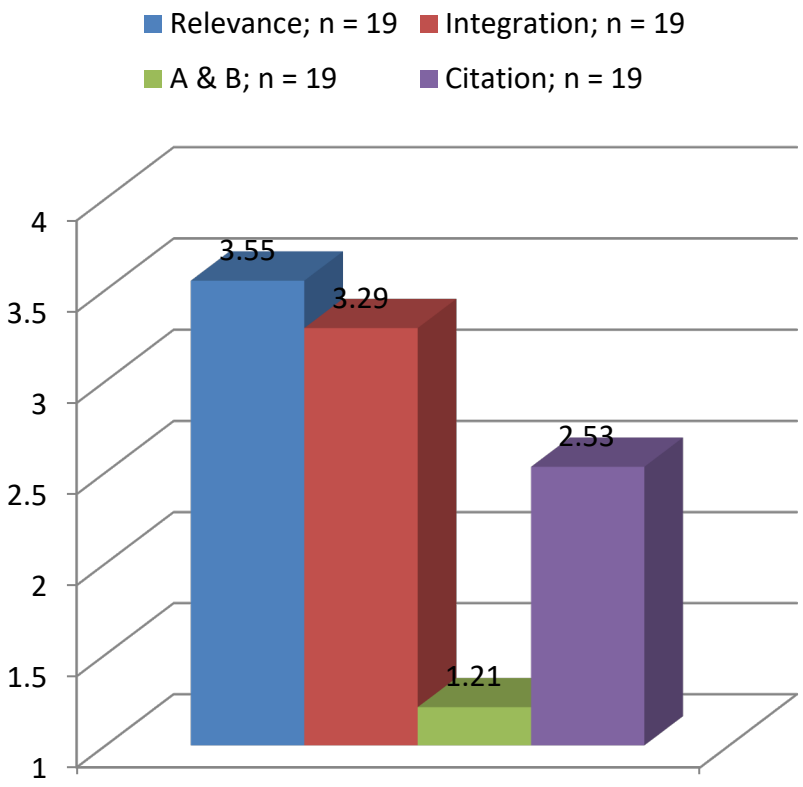
Integrative Thinking



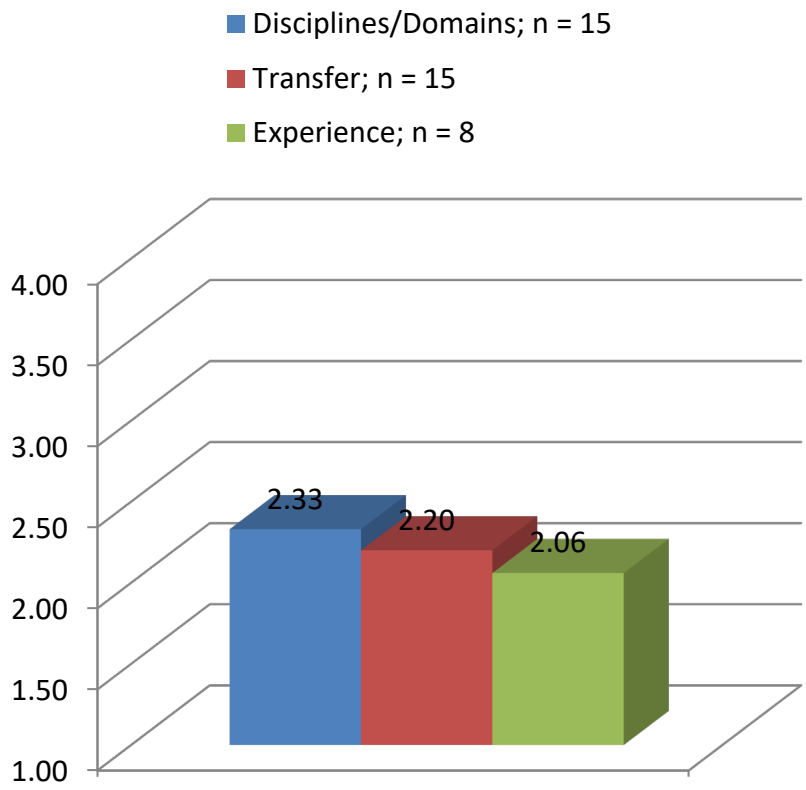
Capstone Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

Information Literacy



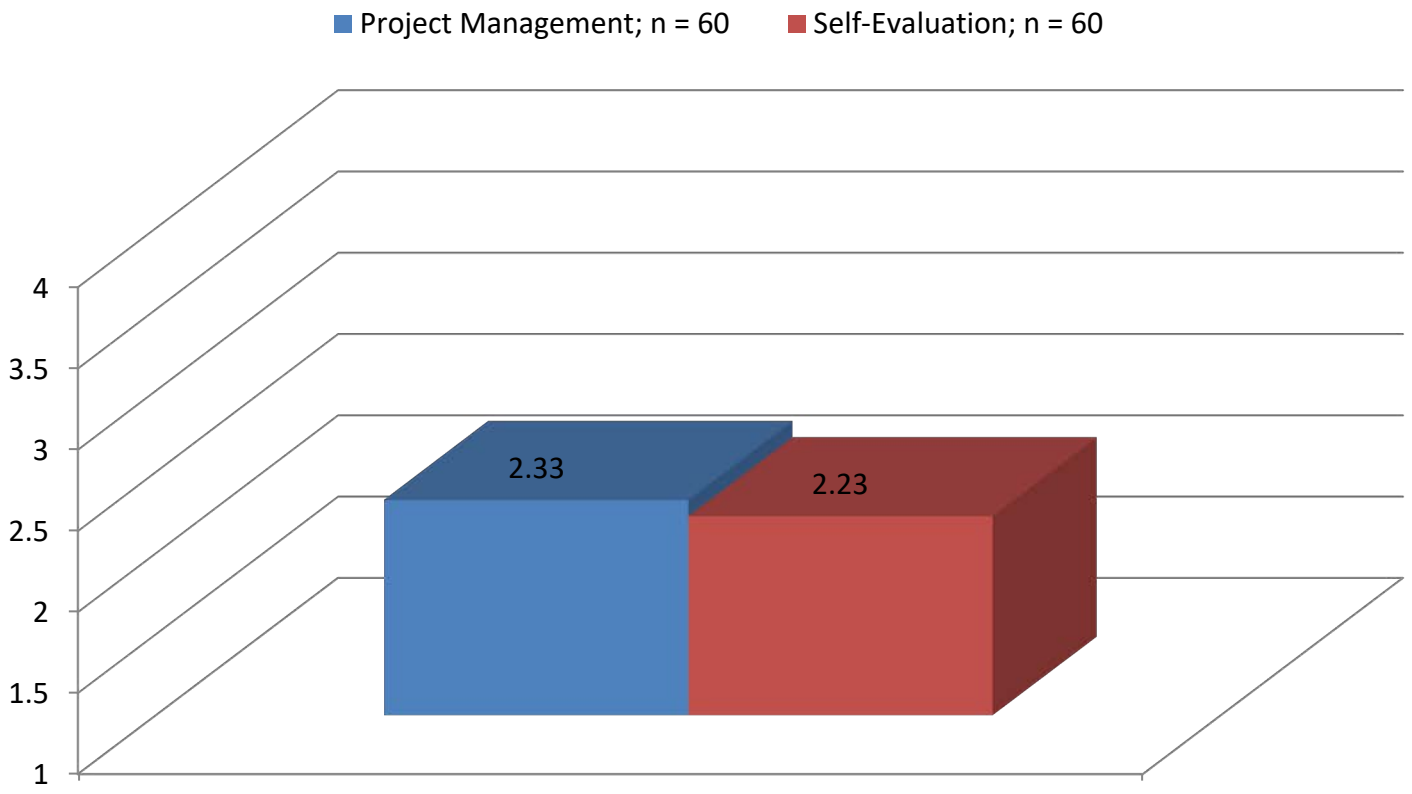
Integrative Thinking



Capstone Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score. Some artifacts were from courses that, in addition to being Capstone, also were WI, international, CT, and/or CBL.

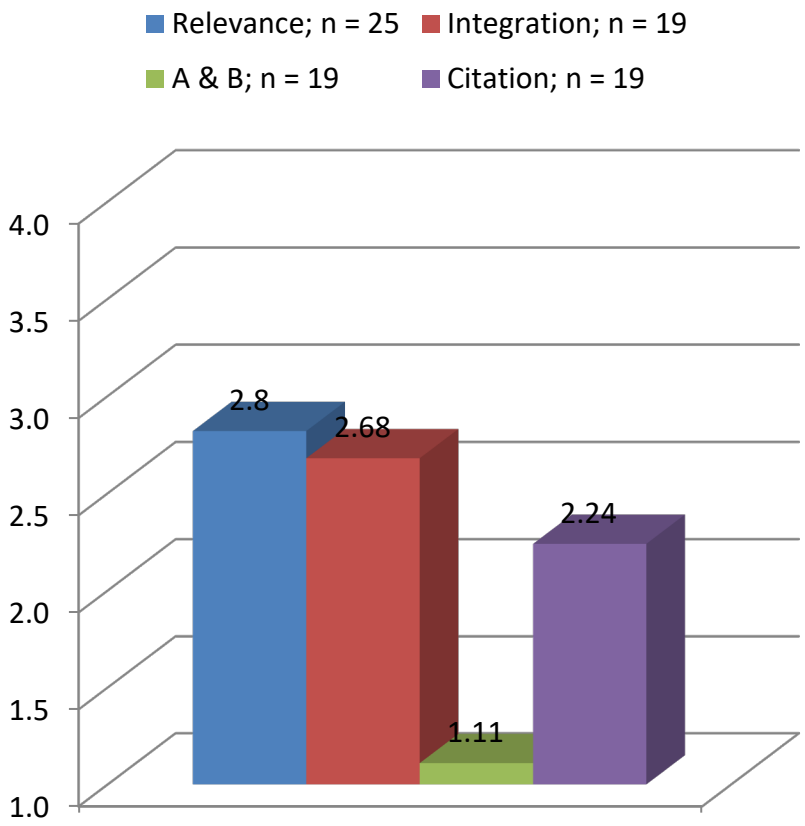
Metacognitive Thinking



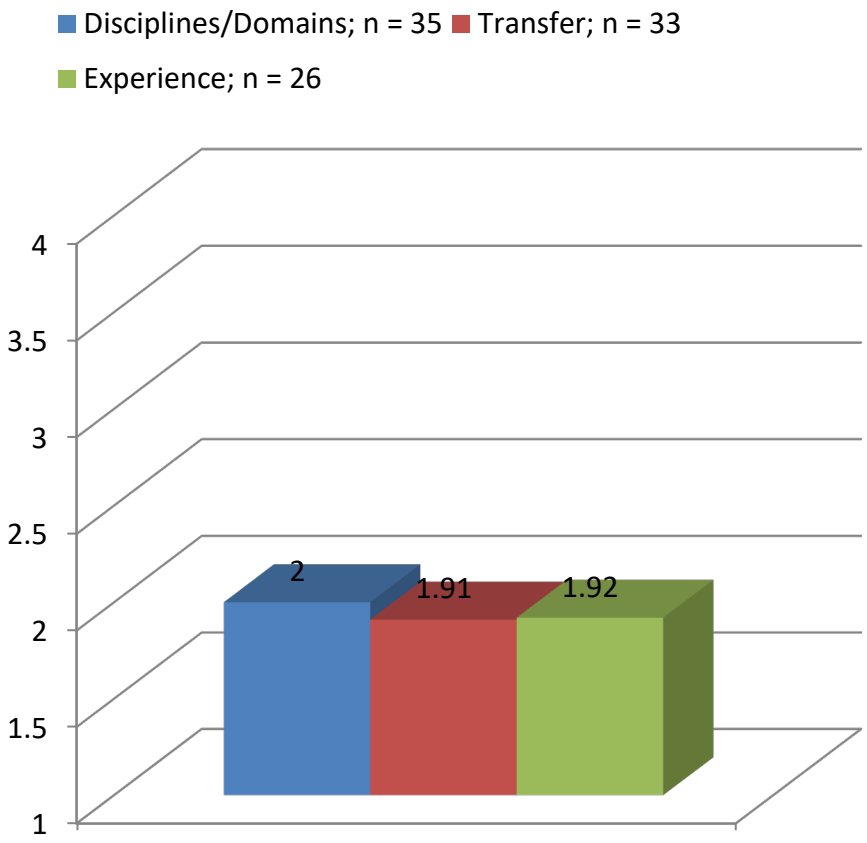
Online Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

Information Literacy



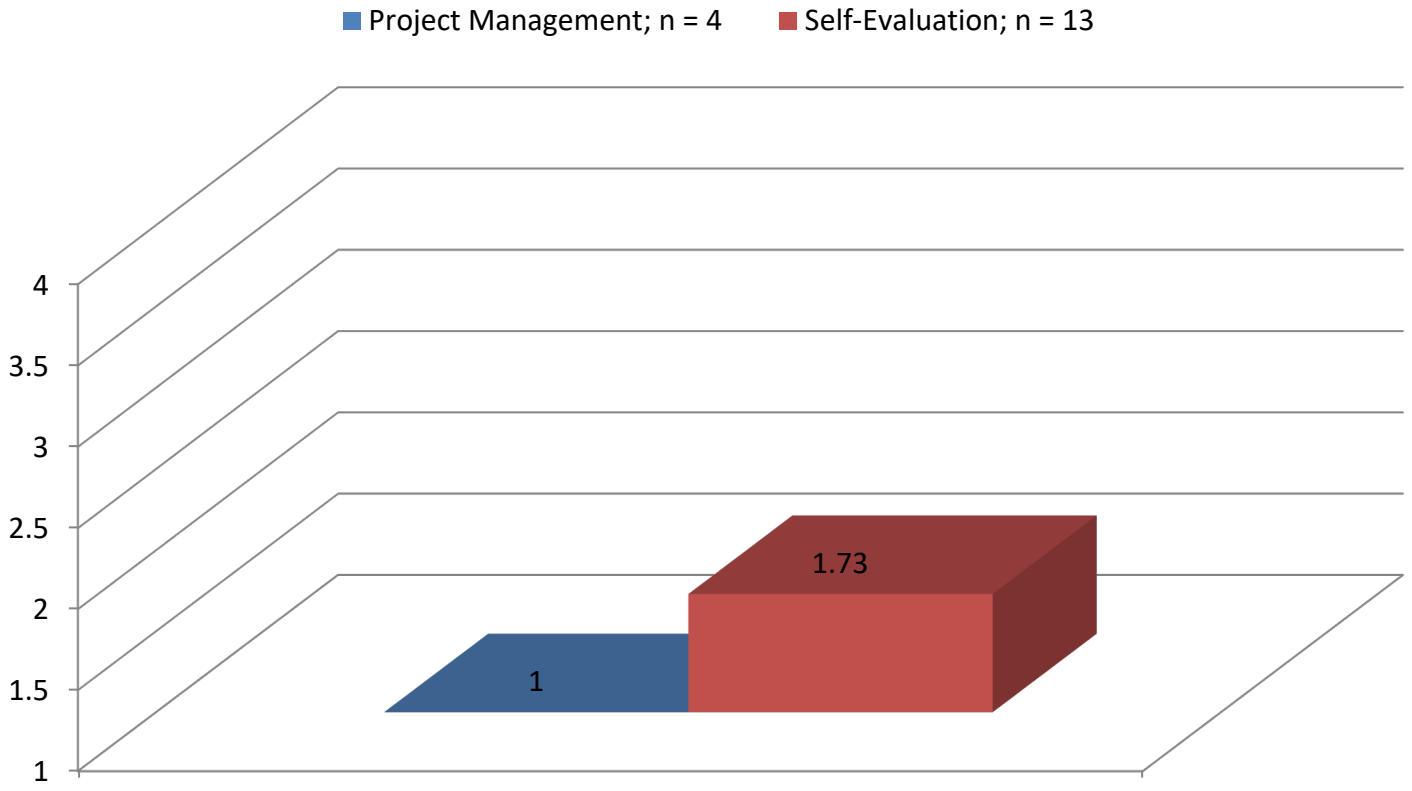
Integrative Thinking



Online Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

Metacognitive Thinking



Online Courses

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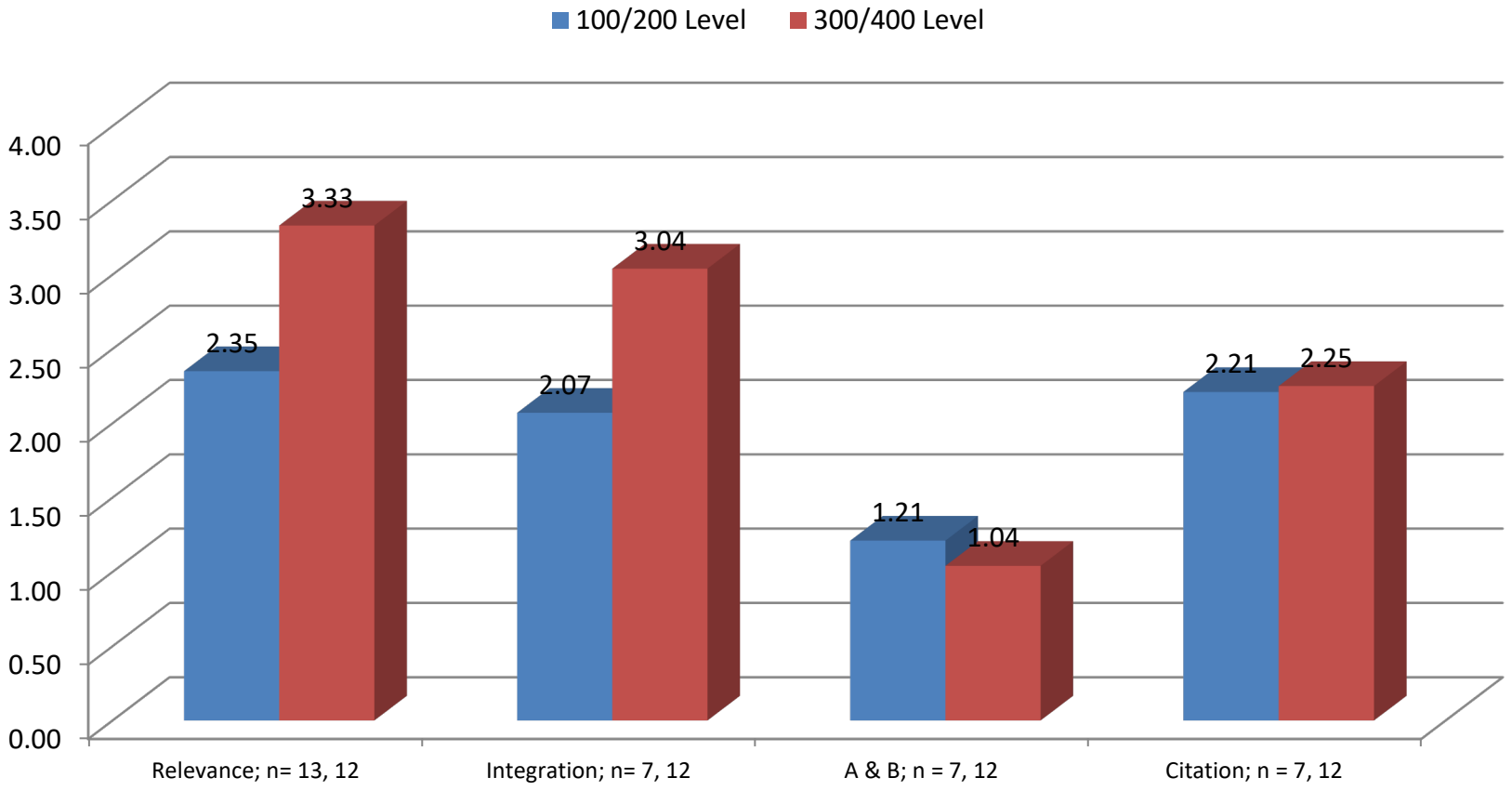
Information Literacy



Online Courses

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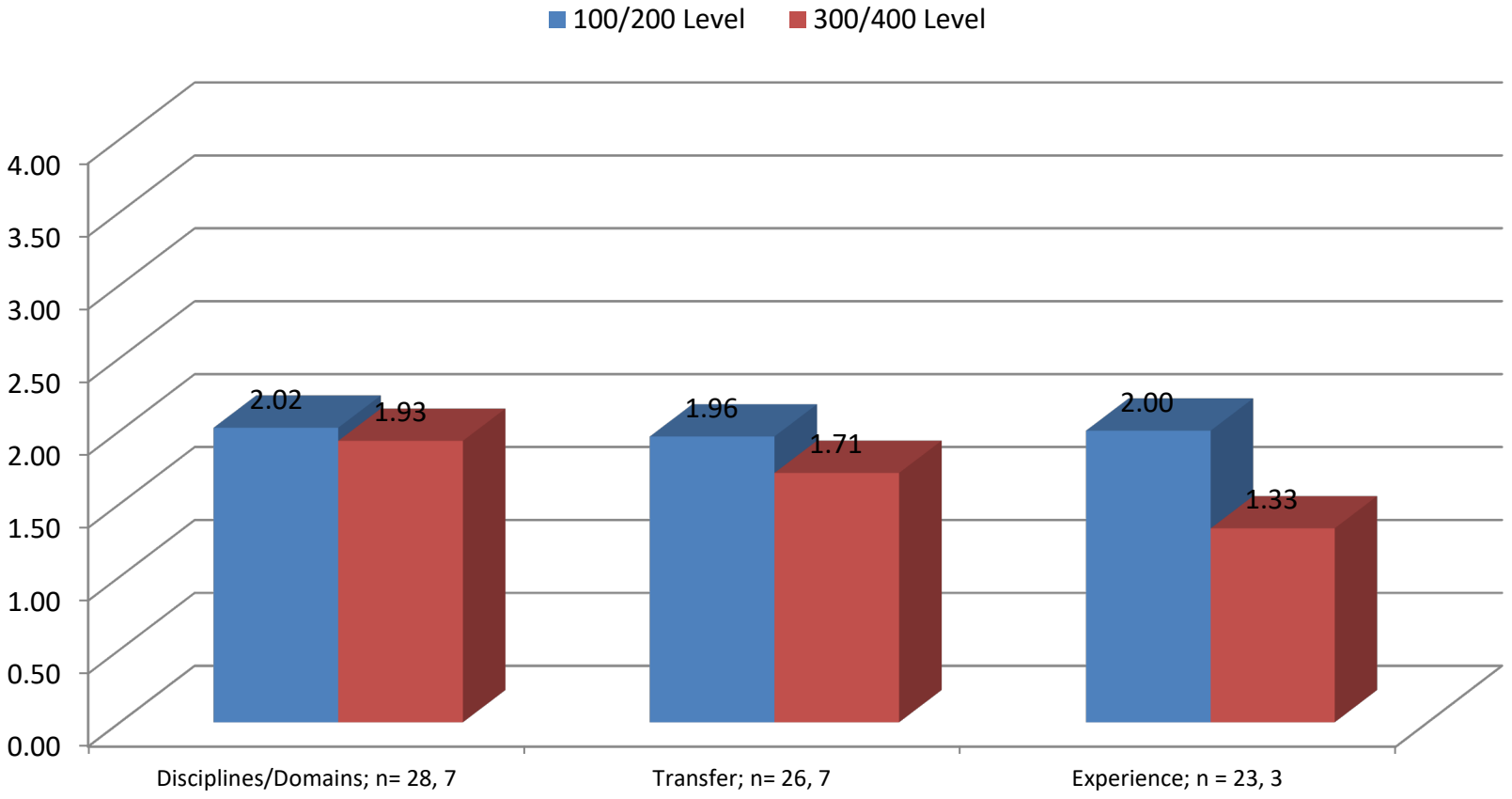
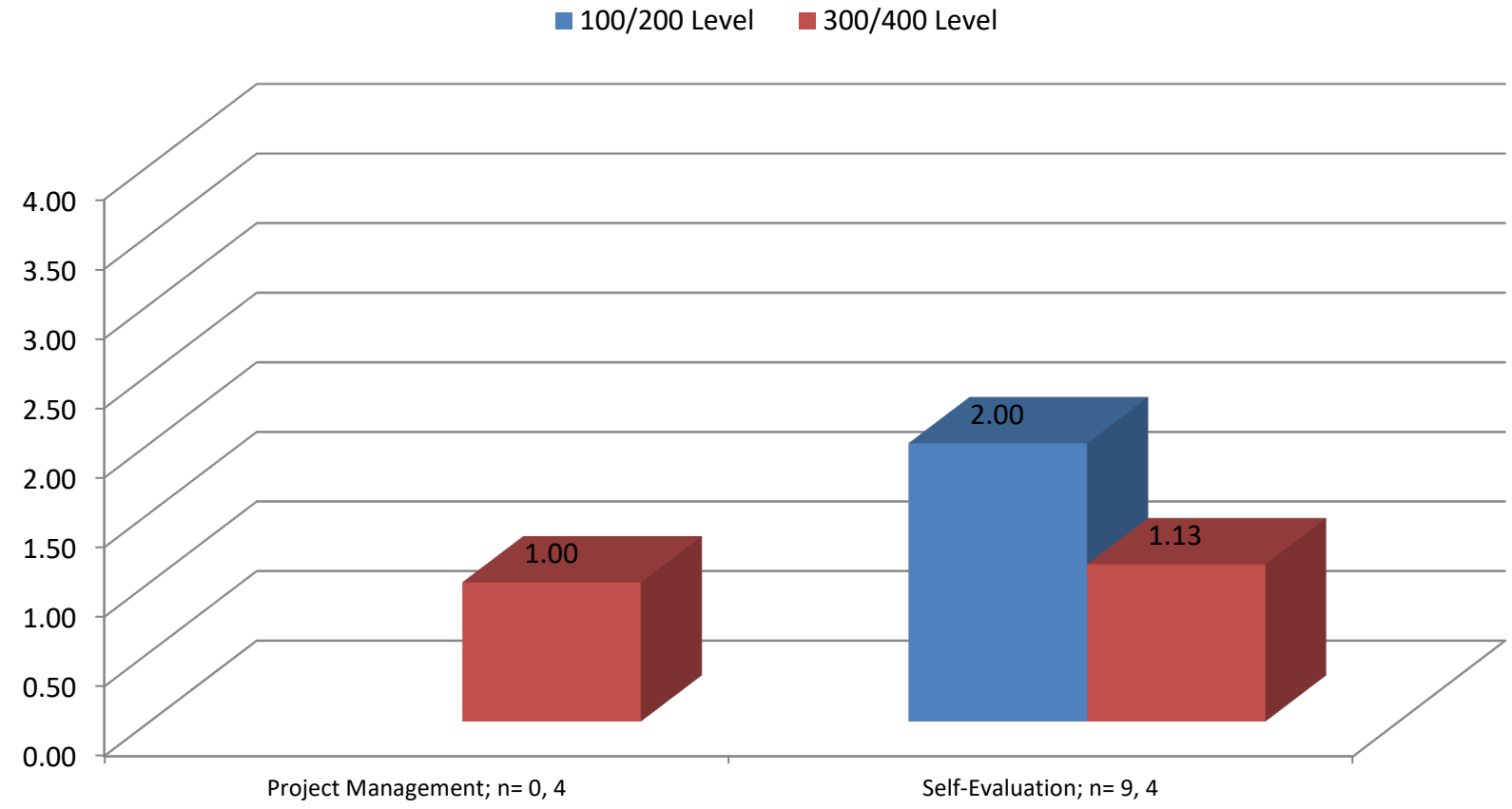
Integrative Thinking



Online Courses

Mean Scores on a scale of 1 – 4, with 4 being the highest possible score.

Metacognitive Thinking



Reference

Stellmack, M.A., Kohneim-Kalkstein, Y. L, Manor, J. E., Massey, A. R., & Schmitz, J. A. P. (2009). An assessment of reliability and validity of a rubric for grading APA-style introductions. *Teaching of Psychology*, *36*, 102-107.