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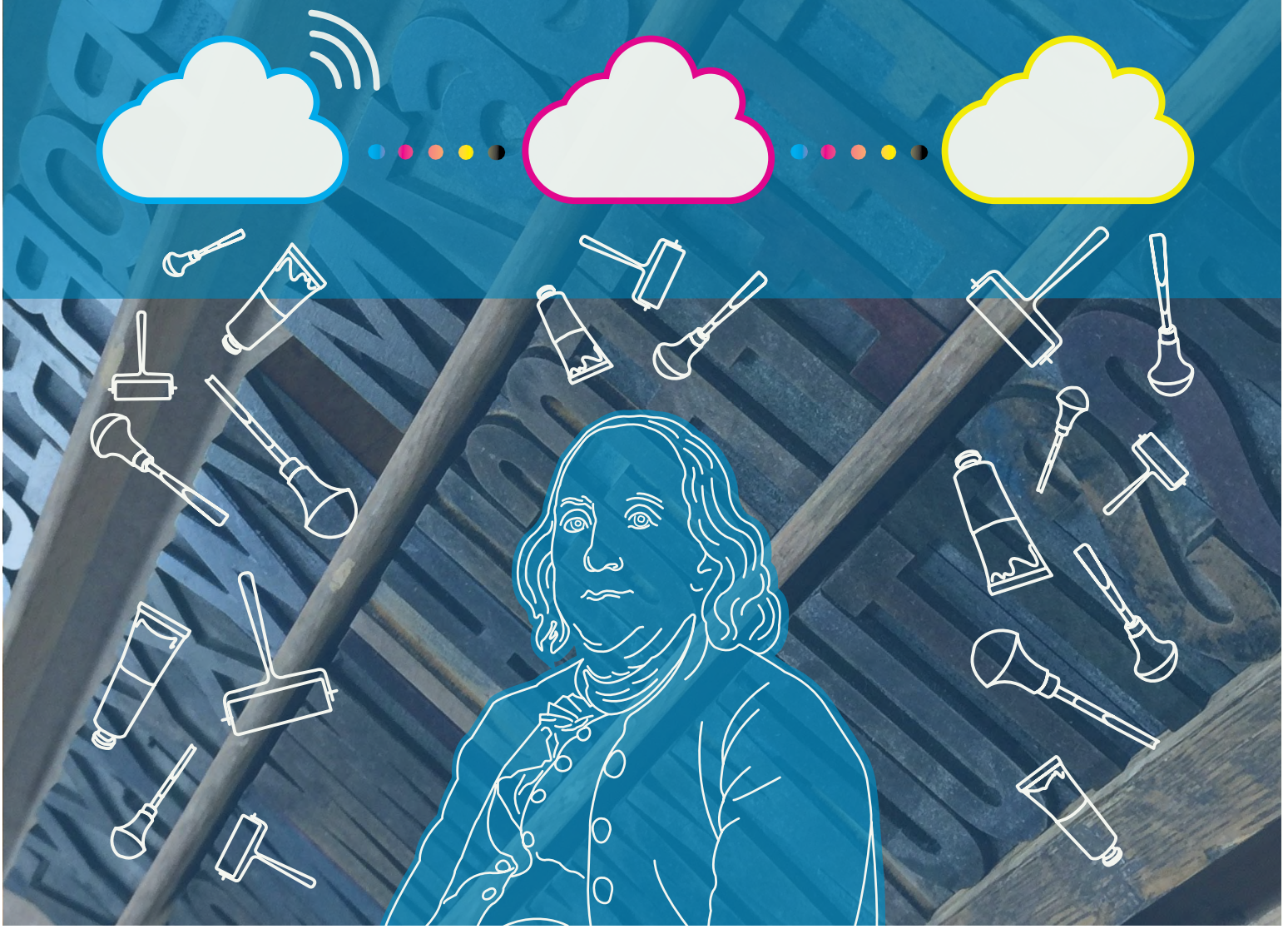
Fostering a Teamwork Approach in Graphic Communications Curriculum

Shaun Dudek, Ed.D. and Sara Smith, D.Tech.



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Fostering a Teamwork Approach in Graphic Communications Curriculum

by Shaun Dudek, Ed.D. • University of Wisconsin-Stout • Sara Smith, D.Tech. • University of Northern Iowa

Introduction, Background, and Industry Need

Extreme changes within the graphic communications industry have taken place as the industry moves out of the economic recession. Some driving forces advancing the graphics industry are the immediate social connections, digital communication, mobile information, and data analytics. Printing Industry of America's Chief Economist (Davis, 2015) describes the industry as one that has "evolved into a manufacturing-service hybrid, with an increasing marketing provider component." Therefore, the labor force requires more of a generalist for talent rather than a specific task producer. More so, incorporating new ideas, and implementing a teamwork methodology can advance these broad skills into measureable outcomes.

Currently, graphic communications education prepares students for careers in printing, publishing, packaging, digital media, multichannel marketing, and allied industries. Educational programs have for years seamlessly developed pathways for an education-to-industry framework, which has included prescriptive knowledge, skills, and tasks to meet workforce needs. However, as traditional printers change from PSPs (Print Service Providers) to C-MMSPs (Cross-Media Marketing Service Providers), industry requires employees who are able to think innovatively and create comprehensive solutions that meet customer needs (Cross, 2011; Fenton, 2015).

As the graphic communications industry continues to evolve from strictly product-producers to a service-industry, the positions recent graduates secure will be different from graduates who entered the workforce a decade ago. In the past, teachers viewed educational content through a lens of specific employment positions, and used that "job framework" to encompass skills, knowledge, and abilities for individualized tasks. The task-by-task competencies were expectations under an apprenticeship model during the rise of factory production and manufacturing, and not a model used for global strategies used today in hiring talent (Manpower Group, 2013). Graphic communications education programs need to modify from singular equipment training content to incorporate additional curriculum containing concepts of teamwork and be inclusive of critical-thinking for a broader skill cluster, rather than simply on job classifications" (Manpower Group, 2013). It is these newer concepts of theory and practice that are tied to economic growth and applicable for today's workplace and business applications (DiMattina & Ferris, 2013).

As the global world shifts and technologies advance, industry leaders and employers have identified that soft skill attainment will lead employees to greater success (S. Smith, 2014). These skills include problem solving ability and the proficiency to work in teams. Particularly, the need exists for educators to provide opportunities for students to develop a problem solving mindset and the strategies and capabilities to function successfully in teams.

Graphic communications educators should cultivate an active approach in classrooms to introduce Team-Based Learning (TBL) strategies for students to collectively engage in the understanding of content as knowledge. For the purpose of this paper, the authors introduce solutions and best practices for the gamut of group learning from small, casual use, to the whole-course strategy of TBL.

An active approach to teamwork and the changing technology processes require students and employees to be prepared for flexibility. More so, TBL "enables teachers to achieve equal or better content coverage and still use 70 to 80 percent of class time with students engaged in activities that deepen understanding of how course content applies to real-life situations and problems" (Michaelsen & Sweet, 2011, p. 42).

Teamwork Overview

Team-based learning requires student collaboration and high levels of classroom engagement with critical thinking. Students experience joint successes when such efforts are applied through "leadership, decision-making, trust building, communication, and conflict management" (Lamm, Dorneich, & Rover, 2014, p. 3). Instituting TBL into a classroom is more than breaking the class into groups. Therefore, TBL is not just group work to complete a project, but a curriculum design practice to sequence activities that deepen student engagement and content understanding (Michaelsen & Sweet, 2011). Brame (2014) defines TBL as "… a structured form of small-group

learning that emphasizes student preparation out of class and application of knowledge in class" (para 1). It is not considered, or rationalized, as a group-effort model with a single leader taking other members' input. Teamwork research since the 1980's shows these results do not always end in success or innovation, but the rates increase if teams are taught about a systems framework for teamwork behaviors to better understand the various dimensions of group interaction (Rousseau, Aube, & Savoie, 2006).

Rousseau et al. (2006) recommend a preparation stage where student teams need time to individually orient themselves to the framework of "preparation, execution, evaluation, and adjustment" needed to accomplish the end goal (p. 548).

Research by Manktelow & Broadbeck (2009) identifies seven defining factors in which group effort has a common purpose with paired abilities and skills, and has everyone mutually accountable, so members:

1. Share a common goal and approach.
2. Are small in number.
3. Work together.
4. Are mutually accountable for delivering these goals.
5. Are interdependent; possess complementary skills and abilities.
6. Interact; the integration would have a direct bearing on results.
7. Include integration with other team members as a responsibility. (p. 13)

The incentive to work together cohesively will carry the performance of the group in the preparation stage. As a start, the classroom teacher can facilitate a prior-knowledge assessment or pre-class assignment to facilitate the conversion of new information into learning (Tomcho & Foels, 2012). More so, the teacher can request students to submit a biography of his/her background, experience, and overview of extracurricular activities. By completing a pre-test, assessment tool, and biography, a teacher can have the needed content to better create groups that have a cross-section of knowledge, traits, and behaviors.

Components and Criteria of Small Groups

To achieve the best possible results with groups in learning, there are four practical elements of TBL that need to be maintained:

1. Strategically formed, permanent teams.
2. Readiness assurance.
3. Application activities that promote both critical thinking and team development.
4. Peer evaluation (Michaelsen & Sweet, 2011).

Research cited by Davidson, Major, and Michaelsen (2014), reviewed years of TBL outcomes, finding the following positive changes within groups when these conditions are met:

1. The groups become more effective at using their members' intellectual resources (at 25-30 hours) (Watson, Michaelsen & Sharp).
2. The groups are better able to cope with and take advantage of the resources potentially available in diverse groups (at around 30 hours—Watson, Kumar & Michaelsen).
3. The groups utilize different strategies for resolving conflict in reaching decisions. Early on dominant strategy is "compromise"—everyone is willing to lose a little just so they can reach agreement. Later on (25+ hours), compromise is completely off the table and the groups use "problem solving" (Birmingham & Michaelsen).
4. Team members' experience increases their emotional intelligence (Borges, Kirkham, Deardorff & Moore) and interpersonal/team-management skills (Opatrny, Michaelsen & McCord). (p. 10)

A cohesive learning community is built from using any type of framework that allows students to take individual ownership. It is the shared collaboration that builds strategic activities to meet course outcomes.

More so, it is beneficial to understand where TBL, as defined by Michaelsen, fits into the overall umbrella of small group learning. Fink (2003) has identified two additional variations, Casual Use of Small Groups, and Cooperative (a.k.a Collaborative) Learning Groups. Fink considers these "complementary but distinct approaches" (Michaelsen, Knight, and Fink, 2004, p. 6). A visualization of their relationships can be seen in Figure 1.

Casual use of small group learning is generally temporary, often used within a portion of one class session. This

Three Uses of Small Groups

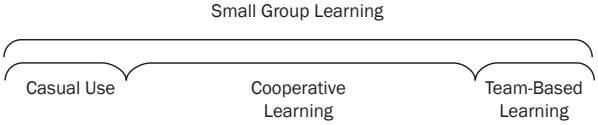

Figure 1

technique is much simpler and requires less preparation (Michaelsen et al., 2004). However, because small group learning is less involved, it tends to have fewer benefits. To compare and contrast the content of Cooperative Learning, also known as Collaborative Learning, and Team-Based Learning.

The components in Table 1 illustrate the numerous options available when utilizing teamwork for learning in any curriculum. It is important in the graphic communications curriculum, which involves a great deal of hands-on and lab-based work. While TBL has many positive benefits, it is not always feasible to use, because it is a whole-course approach with structured processes.

Applications and Strategies of Teamwork in Learning

In order to successfully implement teamwork in learning, there are many thoughtful decisions that must be made. These include determining how to form groups, deciding how to facilitate group interaction and solve problems, choosing how groups will report out, and how to evaluate and grade work (Barkley, 2010).

When it comes to forming groups, many researchers, such as Frederick (2008), recommend that the teacher develop the groups using a process based on the known assets and liabilities of the members. The preferred approach is to create groups that are balanced by student abilities, background knowledge, experience, and personal habits (content derived from pre-assessments and student biographies).

In addition to forming the groups, teachers need to decide if and how to grade the work produced by the groups. Depending on whether the group is temporary or set up on a more permanent basis could have an impact on grading decisions. In the case of a collaborative or cooperative group, grading may not be applied due to the short-term use. What is more, most TBL research indicates prompt and immediate feedback allows the students to shift "from knowing the content to applying the concepts" (Simonson, 2014). However, according to Fredrick (2008), she indicates that grading is a definite way to demonstrate to students that teamwork has a specific value. For example, a single-project group grade as one calculation, group reflection as another, "self- and peer-evaluations have the potential to get students thinking critically about the process of teamwork," and shows that group grades are important (Fredrick, 2008, p. 450). In the case of TBL as created by Michaelsen et al. (2004), group grading is critical and needs to be a significant portion of the course grade. Thus, grading can range from no grading (as in pairs of students used for brief discus-

Table 1: Compare and Contrast the Content of Collaborative/ Cooperative Group and Team-Based Learning

	Collaborative/Cooperative Group	Team-Based Learning
Team Formation and Size	• Instructor-formed • Not typically permanent • Heterogeneous • 2-4 members, may vary with task	• Instructor-formed • Permanent • Heterogeneous • 5-7 members
Ensuring Concept Familiarity	Activities vary • Lecture • Individual study • Jigsaw • Etc.	Readiness Assurance • iRat* • tRat* • Appeals • Instructor tutorial
In-Class Assignments	Activities Require: • Face-to-face interaction • Structured tasks suitable for group work • Interdependence	"4-S" Assignments § • Significant problem • Same problem • Specific choice • Simultaneous report
Peer Assessment	• Feedback during group process/reflection • Peer assessment occasionally used	• Quantitative • Qualitative • Formative • Summative
Strategies for promoting productive interaction in groups/teams	• Smaller groups • Group structures • Assigned member roles • Post-activity reflection/ process discussions • Team/class building activities • Monitoring interaction • Providing guidance when needed • Providing feedback to group/members	Develop self-managed teams by: • Permanent groups • Grade incentives • Peer assessment and feedback Facilitating immediate performance feedback during/from: • Readiness Assurance • "4-S" Assignments
Assessment	Maybe/Maybe not	Self, Peer, and Group
Requires class re- design?	No	Yes

Notes: Components/Criteria of Small Groups, adapted from Davidson, Major, and Michaelsen, (2014, p. 9). * Terms identified in Appendix A. Identified in text below.

sion) to critical grading (which becomes 30–40% of the course grade, and gets students involved in deciding how grading and evaluation will be handled).

When using a teamwork approach to learning, teachers are most effective in the role of a facilitator. Typically, the goal is to improve group communication & synergy. The learning goals are still teacher-directed, and the responsibility and accountability for learning shifts to students (Fink, 2003). “Effective teamwork relies on students’ ability to negotiate authority in small peer groups and manage the conflicts that arise” (Fredrick, 2008, p.440). Therefore, teachers will have to help groups learn skills for interaction and co-learning. For example, teachers may have to recognize that social chatting may actually have important benefits to the quality of teamwork. The goal is to know at what point chatting becomes a detriment.

Assignment/project design is extremely important. Success begins with a well-designed project and measured outcomes (Fredrick, 2008; Michaelsen et al., 2004). As such, when there are issues with group based learning, the fault usually lies in the assignment, not in the group. A teacher must scrutinize each assignment and it may be of value to examine questions prepared by experts to use all, part, or a combination of three success models, Michaelsen et al. (2004); Fredrick (2008); Manktelow & Brodbeck (2009). These researched models aid in determining if an assignment is appropriate for use in a teamwork approach to learning (see Appendix B for Questions, Checklist and Guides for Group Work).

Teamwork Benefits and Best Fits

Group-based learning can be successful in nearly every type of learning situation. Depending on how it is designed and executed, TBL has been shown to work effectively in classes that are large, average, face-to-face, online, hybrid, for students with disabilities, for minority and non-native speakers, and for students in various cultures around the world (Michaelsen et al., 2004, pgs. 202-204). In addition, Michaelsen & Sweet (2011) have found TBL to be effective because the application adapts to more learning styles. Additionally, success can be found with learners who are deaf or have Attention Deficit Disorder. Further indication for the benefits of TBL is that it has elements of other successful teaching methods, including flipped classrooms (Brame, 2014), and Evidence-Based Learning (Michaelsen & Sweet, 2011). In addition, TBL is compatible with other learning strategies and can be used in parallel. Anwar et al. (2012) combined TBL with Problem-Based Learning (PBL) during a medical course and found evidence of great improvement in learning outcomes.

The teamwork approach has a great deal of potential for graphic communications curriculum due to the fact that it incorporates "backward design," where teachers first consider what they want students to be able to *do* upon completing the course, decide how it will be assessed, then plan the learning experiences and instruction (Baughman, Brumm & Mikelson, 2014, p. 3). It changes the focus from teacher-centered to student-centered. Another way to view this is to say that the course changes from the teacher covering or transmitting the content, to students using teamwork in learning activities and creating knowledge (Michaelsen, et al., 2014). The *doing* aspect of graphic communications competencies, in addition to the *knowing* aspect, is very prevalent. For example, students are often asked to demonstrate their knowledge and abilities as they make a product to solve a design problem.

While the many benefits of group-based learning are clear, some courses and situations are better suited for this approach than others. Michaelsen et al. (2004) indicate that TBL, specifically, can be used in courses as long as they meet both of these criteria:

1. The course contains a significant body of information and ideas (i.e. the content) that students need to understand.
2. One of the primary goals for the course is for students to learn how to apply or use this content by solving problems, answering questions, and resolving issues.

Courses that could be the best fit for the whole-course approach include those with topics such as management of graphic communications, workflow, and cost estimating. These larger topics would benefit from the pre-work such as reading, then discussion and application of concepts. In contrast, some courses within a typical graphic communications curriculum may not be good candidates for group-based learning, such as a software course. Here, existing skills and knowledge might set experienced students apart from those with less experience, and more individualized instruction would be needed.

Specific graphic communications curriculum examples

The following are examples of utilizing group-based learning within the graphic communications curriculum, including creative brainstorming activities; large cross-media projects; and courses in which teams are created and work together for the whole semester by tackling a community project.

Creative brainstorming sessions can be used effectively in graphic related courses. Students working in groups can express their ideas, and push each other to improve their work. The assignment could have instructions for the groups to meet outside the classroom, at possibly the campus library or even at a coffee shop. The directions need to be very specific, with a reporting scheme in place, and even a photo of the attendees as part of the assignment submission. Additionally, integrating project management software or applications has been found of value. Options can range from Google Docs and Google+, Microsoft SharePoint, Blackboard Collaborate, and Basecamp. These types of applications allow the teacher to see specific team member interaction and track the group work process in real-time. Individual and group grades can be implemented for both the process and end product. In practice, students have reported these activities to be some of their favorite and most beneficial for developing ideas.

Another example of TBL is for courses that introduce a variety of communication technologies. The culminating project can have student groups produce a cross-media campaign for a non-profit community member. The requirements may instruct both digital and print formats to communicate the message. As students plan, design, and create, they can detail how the media channels would support each other. For example, if the students printed t-shirts and bumper stickers, they could put addresses for websites or Facebook pages in the printed information. Likewise, the website and Facebook page would have links to allow viewers to purchase the t-shirts and bumper stickers, as well as water bottles or any other printed items the students create. Throughout the project work, students communicate within their groups, solve problems, and apply course concepts. Process and product can have individual and group grades.

One final example of applying group-based learning is within a technical visualization course. This example differs from the previous two in that the groups work together all semester long, on a variety of projects. The main subject matter utilizes visualization methods, such as charts, graphs, and infographics to better understand data within many different fields. However, during this semester course, students could work on content building projects jointly during class time to expand skills, but the final culminating project would be the individual preparation of visualizations along with a presentation. The group learning aspect serves as the core of the grade during the semester, built to increase student understanding of the subject matter by co-creating knowledge, but in turn fosters confidence for his/her final presentation, which would be graded individually.

Conclusions

As technology changes and cultural trends continue to influence the graphic communications industry, many businesses need to reinvent themselves to offer a convergent hybrid of products and services. It is not enough to add auxiliary services or make efficiency adjustments to day-to-day operations. Organizations need innovative ideas and new ways of thinking. The employees of the future must assist in leading the change by using teamwork and problem solving skills.

Graphic communications educators can foster a teamwork approach for classroom creativity, innovation, and a broader knowledge skill set to meet new workforce demands. The resultant change of new wider knowledge differs from having skilled tasks for specific job descriptions as seen in the past. The singular thinking of performance-based individual outcomes must be altered to adopt a teamwork approach. The concepts and theories behind Team-Based Learning (TBL) include critical thinking and creative problem-solving. By including TBL in the classroom, students will gain leadership skills and decision-making skills, build trust among peers, and gain an understanding of professional communication and conflict management practices. Educators have an opportunity to introduce the understanding and collective engagement of TBL into their classroom in small steps or on a larger scale.

Team-based learning could be a holistic curriculum redesign. It can also be a flexible, sharing practice of real life situations reflecting the various dimensions of group interaction. By sequencing projects, the structure of teamwork will have the students understanding the end goal prior to the group activities. Students will also become more effective and accountable to the group

because of the independence and accountability for sharing their thoughts with other group members. Furthermore, educators can scaffold tasks to bring the flexibility of TBL projects into the classroom. It is the educator's role to review and correct any misconceptions in the content for a TBL activity. The final stage in a TBL activity is to identify strategies with direct application to the industry and workforce, and then students will be able to apply the group learning at the various stages of workflow and production.

Further work is needed to develop and test TBL in graphic communications curriculums. Additionally, an investigative study can inquire about specific methods and develop specific assessment tools related to graphic communications curricula and TBL. Lastly, TBL works in conjunction with project-based learning, which opens up another avenue of research. The many theories and approaches for teamwork provide a wide variety of opportunities to pursue creative and innovative practices for educators looking to expand classroom engagement, reach measured outcomes, and fulfill workforce needs.

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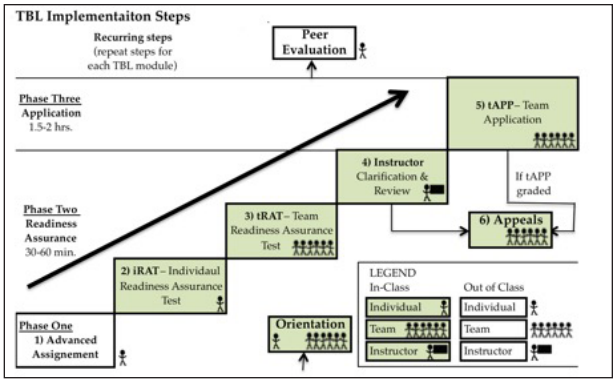
Appendix A

Team-Based Learning Sequence



Davidson, Major, & Michaelsen, (2014) suggest each module of instruction should begin at Phase One, Step 1, with individual readings, presentations or videos as outside learning in preparation of classroom readiness assurance. By having prior knowledge or a new knowledge base, the students enter the class and have stronger confidence when working in groups. Step 2 is the iRAT, meaning individual Readiness Assurance Test. Again, this individualized test should be an assessment of major concepts from the outside assignment. Upon completion, and moving to Step 3 shown as tRAT, allows the team as a whole to take the same assessment and find consensus for a group result. Davidson et al. (2014) uses the Immediate Feedback Assessment Technique (IF AT) as a scoring method for the teams, which can be found in their research. This tool allows for immediate feedback to the team, and to the teacher to see if there is an understanding of the module concepts. Simonson's (2014) research expands the assessment tool forms used for iRAT and tRAT for "immediate feedback assessment technique Epstein Educational Enterprises, Cincinnati, OH" (p. 49). Entering into Step 4, the classroom teacher reviews the results and corrects any misconceptions, and/or addresses content. Depending on class time length, Phase Three, Step 5 can continue the module or this step might wait until the next class session. This final stage in applying the TBL Sequence involves the opportunity of team application, or tAPP for significant application of the concepts through team problem solving.

Appendix B

Questions, Checklist, and Guides for Group Work

Variables that determine if a particular assignment will build group cohesiveness:

1. Does it promote a high level of individual accountability for team members?
2. Does it bring members into close physical proximity?
3. Does it motivate a great deal of discussion among team members?
4. Does it ensure that members receive immediate, unambiguous, and meaningful feedback (preferably involving direct comparisons with the performance outputs from other teams)?
5. Does it provide explicit rewards for team performance? (Michaelsen, Knight, & Fink, 2004, p. 55)

Criteria to consider for the effectiveness of a group project:

1. As designed, is the project too big for an individual to complete without help? Do students have to work together to define, research, and write the project, or could they easily divide the project into individual parts that are then stitched together at the end?
2. Does the project take into account the different skills and experience team members bring to the project?
3. Does the project schedule provide students with sufficient in-class and out-of-class meeting time in the earliest stages of a project (during brainstorming and preliminary planning), when students are most likely to negotiate their authority relationships? (Fredrick, 2008, p. 446)

West's Six Parameters—defines why and when best to consider a team approach, and used in conjunction with the Seven Defining Factors:

- **Completeness** – The task should be whole, not simply putting the studs on the car wheels, but assembling the whole transmission system plus the wheels.
- **Varied Demands** – The task should require a range of skills that are held or best developed by a number of different individuals.
- **Significance** – The task should contribute significantly to organizational goals.
- **Learning Opportunities** – The task should provide team members with opportunities to enhance their knowledge and skills.
- **Developmental Possibilities** – The task can be developed to offer more challenges to team members over a period of time.
- **Autonomy** – The task allows the team members a sufficient amount of say over the team decisions. (The definition of "sufficient" is extremely important (Manktelow & Brodbeck, 2009, p. 14).

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Artwork

- Scan photographs at 300 ppi resolution.
- Scan line drawings at 800 ppi resolution.
- Screen captures should be as large as possible.
- Graphics should be sized to fit in either one column or across two columns.
  - One column is 3.1667" wide, two columns are 6.5" wide.
  - Graphics may be larger than these dimensions, but must not be smaller.

Manuscript Guidelines

Eligibility for Publication

Members of the Graphic Communications Education Association, or students of GCEA members, may publish in the *Visual Communications Journal*.

Audience

Write articles for educators, students, graduates, industry representatives, and others interested in graphic arts, graphic communications, graphic design, commercial art, communications technology, visual communications, printing, photography, desktop publishing, or media arts. Present implications for the audience in the article.

Types of Articles

The *Visual Communications Journal* accepts four levels of articles for publication:

1. Edited articles are accepted or rejected by the editor. The editor makes changes to the article as necessary to improve readability and/or grammar. These articles are not submitted to a panel of jurors. The decision of the editor is final.
2. Juried articles are submitted to the editor and are distributed to jurors for acceptance/rejection. Juried articles are typically reviews of the literature, state-of-the-art technical articles, and other nonempirical papers. Jurors make comments to the author, and the author makes required changes. The decision of the jurors is final.
3. Refereed articles are submitted to the editor and are distributed to jurors for acceptance/rejection. Refereed articles are original empirical research. Jurors make comments to the author and the author makes required changes. The decision of the jurors is final.
4. Student articles are submitted by GCEA members and are accepted/rejected by the editor. These articles are not submitted to a panel of jurors. The editor's decision is final. Please be aware that poorly written student papers will be rejected or returned for editing.

Submittal of Manuscripts

All manuscripts must be received by the editor no later than December 15th to be considered for the spring *Journal* or by June 15th to be considered for the fall *Journal*. Include digital copies of all text and figures. Prepare text and artwork according to the instructions given in these guidelines. Be sure to include your name, mailing address, e-mail address, and daytime phone number with your materials. E-mail all materials to the editor (address shown below).

Acceptance and Publication

If your article is accepted for publication, you will be notified by e-mail. The *Visual Communications Journal* is published and distributed twice a year, in the spring and in the fall. Printed copies are mailed to GCEA members. A PDF version of the *Journal* is published online at www.GCEAonline.org.

Notice

Articles submitted to the *Journal* cannot be submitted to other publications while under review. Articles published in other copyrighted publications may not be submitted to the *Journal*, and articles published by the *Journal* may not be published in other publications without written permission of the *Journal.*

Submit All Articles and Correspondence to:
Dan Wilson, dan.wilson@illinoisstate.edu
or check www.GCEAonline.org for contact information for the GCEA First Vice-President.

See following page for style guidelines