Institutional Transformation through Faculty Triads

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Abstract

We report on institutional transformation through *faculty triads*, groups of three faculty that collectively are responsible for large, multi-section (often introductory) STEM courses. Triads are a version of a faculty learning community, with the added benefit of an immediate, practical goal of course transformation. The integration of support before and during the course allowed faculty to engage meaningfully with the relevant discipline-based education research, identifying philosophies and strategies to bring to bear in their respective courses. Most critically, the experience built relationships and fostered meaningful discussions that persisted beyond the specific classes, showing the potential for nucleating faculty culture change in small clusters of connected faculty.

Introduction

Faculty Learning Communities

Faculty Learning Communities (FLCs)are an attractive mechanism for bringing about individual and institutional change. FLCs, a specific form of a community of practice (Cox, 2004, 1995), were initially defined as small (6-15) cross-disciplinary groups faculty engaging in a long-term collaboration on scholarship of teaching, in the process building a sense of community (Cox, 2004). FLCs are often categorized as either cohort-based or topic-based; cohort-based FLCs emphasize common environments and circumstances while topic-based FLCs address specific campus needs (Cox, 2004). FLCs are designed to be a "structured and intensive program," creating a community committed to advancing "teaching and learning pursuits"(Cox, 2004). FLC participants show a stronger sense of community, deeper knowledge of effective teaching practices, earlier tenure rates, and more service contributions to their institutions (Cox, 2004, Hubball & Albon, 2007).

Studies on institutional change emphasize the importance of *emergence*, with goals and activities emerging from discussions and common problems within the affected group (Addis, Quardokus, Bassham, Becraft, Boury, Coffman et al., 2013). FLCs allow for the dissemination, reflection, and a development of a shared vision among the group, all of which can be strategies to achieve pedagogical institutional change (Henderson, Beach, & Finkelstein, 2012). In particular, when groups are allowed to developed their own vision, implement, reflect and disseminate their results these efforts can be a seed to sprout institutional change (Hrabowski, 2014).

Barriers to Collaboration and Change

Multiple barriers, both environmental and individual, exist to institutional and pedagogical change (Dancy & Henderson, 2010). Lack of a departmental supports for pedagogical shifts (Addis et al., 2013; Henderson et al., 2012) or seeing change as not as valuable as research efforts significantly impedes innovation (Tovar, Jukier, Ferris, & Cardoso, 2015). Lack of individual time, knowledge, and perceived cultural resistance to pedagogical change (Addis et al., 2013; Dancy & Henderson, 2010) are commonly cited barriers. In addition, many faculty hesitate to believe in the effectiveness of reformed teaching practices or are concerned about student resistance or losing their classroom autonomy (Addis et al., 2013; Elliott, Reason, Coffman, Gangloff, Raker, Powell-Coffman et al., 2016) and, as a result, teach "the way they were taught." (Sirum, Madigan, & Klionsky, 2009).

A critical barrier to change is faculty isolation. Many institutions lack systems and structures to support faculty collaboration (Dancy & Henderson, 2010)m, with some actively discourage collaboration through economic pressures and teaching schedules (Bohen & Stiles, 1998). The lack of effective support structures, combined with active administrative discouragement, enhances faculty sense of isolation (Baker & Zey-Ferrell, 1984; Cox, 2004; Sirum et al., 2009). This is particularly damaging for non-tenure track faculty, who often carry a disproportionately large share of the teaching load (Banasik & Dean, 2016). Non-tenure track faculty are often less integrated into departmental structure and culture; providing practices to

support their integration can improve their teaching performance and maximize on their intellectual capital, benefiting both the students and the institution (Banasik & Dean, 2016).

Large-enrollment, multi-section courses

Large-enrollment, multi-section courses present unique challenges to pedagogical change. Having many sections and instructors raises issues of consistency in content, learning goals, and teaching practices (O'Neill, Birol, & Pollock, 2010). The large number of instructors makes updating curricula difficult, with the multitude of voices often watering down proposals for significant change. The frequency of course offering, often every semester, leaves little time between offerings to update practices to align with the latest evidence-based education research. Students in multi-section courses that experience inconsistencies between sections can express a sense of unease, inequity and dissatisfaction, which further encourages faculty to avoid "rocking the boat" with innovations.

Faculty Triads

Faculty Triads are small groups of three or four faculty all teaching the same large, multi-section course supported in efforts to transform courses while forming a sense of community and developing faculty to act as institutional change agents (Franklin et al.). Faculty were recruited and supported in their use of a backwards design approach to transform their respective foundational introductory STEM courses. This paper presents evidence that the Triad framework created groups that functioned as strong faculty learning communities, building sense of community through collaboration while fostering pedagogical change and personal growth. Specific research questions addressed include:

1. What was the nature of the collaborations within the Triads and how did the program framework enable the groups to function as faculty learning communities (FLCs) and act as change agents for their institution?

2. What was the administrative perceptions of, and involvement in, the Triads? What impact did the administrative landscape have on these faculty learning communities?

These questions explore how the Triad functions as a uniquely structured FLC to develop a sense of community for faculty and to effect change in their classrooms and beyond, with implications for future attempts to foster faculty collaboration, transform courses, and provide continuity for multi-section courses.

Methodology

Research Design

Qualitative data was collected in the form of Triad artifacts (primarily reports generated throughout the experience) and interviews with participants and administration. The main researcher was herself a Triad member; the study is thus partly auto-ethnographical. Interviews were semi-structured, with open-ended questions designed to create a conversation atmosphere (Hermanowicz, 2002). Separate protocols were created for participants, Department Heads, and the Dean of the College. Participants each sat for one interview lasting about 30-60 minutes. After each, questions were evaluated and modified based on responses, eliminated if responses were determined to be redundant or too determinate and new questions added if warranted. All interviews were conducted over Zoom and auto-transcribed with Zoom.com or Otterai.com. Transcripts were cleaned and corrected by the researcher.

Participants

Participants were drawn from faculty Triad participants, the relevant department heads, and the Dean of the College. The Triads project included four Triad groups from three departments within the College of Science at the same institution. To maintain anonymity, we label Triads 1-4 and departments A-C. There were 15 total participants, including 11 non-tenure track faculty, 2 adjunct faculty, and 2 tenured faculty. Three of the four School Heads had been in that position during the time of the Triad; one had recently assumed the position shortly after the formal project end. Participation was optional; all faculty from Triads 1, 3 and 4 participated while no faculty from Triad # 2 (School B) participated in interviews.

Table 1. The Triad groups and their associated Schools, participant numbers, document type and number of documents obtained.

Group	School	Triad Members	Interviews	Reports
Triad 1	School A	4	4	2
Triad 2	School B	3	0	2
Triad 3	School C	3	4	1
Triad 4	School C	4	4	1
School A Admin.	School A	1	1	
School B Admin.	School B	2	2	
School C Admin.	School C	1	1	
Dean of College	N/A	1	1	

Coding

Coding schemes were developed from the transcripts. After reviewing the raw data, the research team performed a thematic analysis to identify theme which could be compared across all interviews. Themes were used to develop specific codes for data analysis (DeCuir-Gunby, Marshall, & McCulloch, 2011). 6 parent codes were developed with numerous sub codes for each (Table 1). All interviews, including faculty and administration were coded using the same set of codes. Triad end-of-semester written reports were also coded with the same set of codes.

NEED TEXT HERE EXPLAINING CODES & CHILD CODES

Table 2. Parent Codes, Child Codes, and Sub-Child Codes

| Parent Codes	Child Codes and Sub-Child Codes
Group Dynamics	Support and Collaboration
	Shared Vision
	Conflict
Evidence of Change	Personal growth
	Pedagogical changes
	Institutional Change
External Support and Recognition	School-level administrative awareness and involvement

	College-level administrative awareness and involvement
	Satisfied with administrative involvement
Sustainability	Evidence of sustained relationships
	Value in sustainability and expansion
Perceived obstacles	Cultural resistance
	Time/workload burden
	Student resistance
Recommendations	Dissemination
	Evaluation

Data analysis of codes was performed using Dedoose. Participate interviews, administration interviews, and Triad generated reports were analyzed separately. Code applications were normalized within the dataset; when analyzing the variations of child and sub-child codes, the relative frequency of each child code was calculated based on the total number of child codes within the parent code. Instances where an excerpt was coded with a parent code but no child code were not included in the relative frequency of the child codes.

Results

Frequency of code appearance

We first examine the relative coding frequency of interview comments, illustrated in Figure 1.
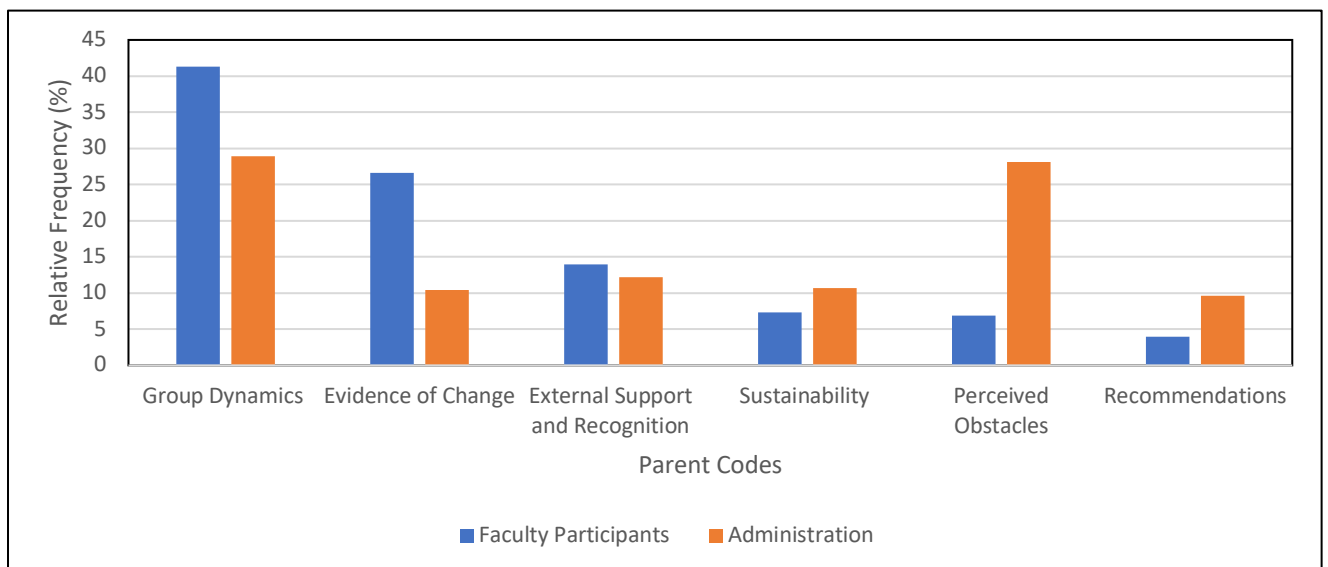

Figure 1: Relative frequency of parent code application for faculty participant and administrative interviews.

Triads foster a welcome sense of community

More than 40% of faculty comments fall under the *Group Dynamics*, code, revealing the strong sense of community Triads bring. Comments often contrast the Triad environment with faculty pre-Triad experiences in explaining explaining their motivation for joining a Triad, e.g. "We were getting burned out by teaching the exact same content, the exact same way, for years and years and years", and "we wanted to make it something that moved away from the traditional lecture... it wasn't something that (one person) was going to be able to handle or take on their own." Many mentioned the feeling of isolation specifically, "you're an island...most faculty are. It's like everybody's a silo." and "I had really taught that course in isolation, I wasn't talking to anyone." In contrast, the Triads took advantage of a shared vision to focus change efforts. We note that while the presence of a shared vision was recognized by the administrators, most could not articulate specifically what their faculty group's vision was, indicating the absence of clear communication between faculty and administration that could impact sustainability.

The sense of community was further seen in the key child codes present: the positive *Support and Collaboration* and the negative *Conflict*. Faculty comments were overwhelming positive ; administration interviews raised *Conflict* more frequently.

Figure 2: *The relative frequency of child code applications for the parent code Group Dynamics for the faculty participant and administrative interviews.*
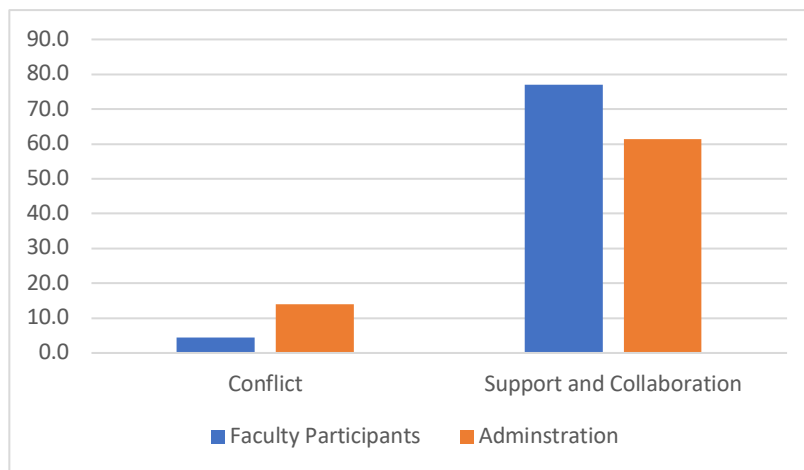
Comments coded as *Support and Collaboration* reveal a heavy emphasis on teamwork, indicating that groups worked as a unified team: "(the Triad was) a cohesive team that worked really well together", "We took on a very team mentality with everything...everyone had an

equal voice in this team", and "It was more than just 'here some materials' but an actual discussion of pedagogy and a good teaching development circle". Interviews also reveal a sense of friendship and comradery that did not exist before the Triads, "the formation of the friendships with colleagues was by far the most positive personal aspect of the triad", "the members of this triad share as special comradery both in and out of the classroom" and "we certainly became good colleagues and even friends. Before we didn't know each other at all".

Triads facilitate both pedagogical and personal change
25% of faculty comments deal with *Evidence of Change,* with 58% centering on *Pedagogical Change*, 30% dealing with *Personal Growth*, but only a handful mentioning *Institutional Change*. While administrators had a comparable fraction (50%) of comments about pedagogical change, it is striking that the majority of the remaining comments (40% of total) dealt with institutional change, further evidence of a disconnect in perception between participants and administration. Pedagogical changes included flipping classrooms, rearranging and realigned content, and shifting to more active learning structures. Participants felt strongly that they could not have made these changes without the Triad, saying "I would have definitely been reluctant" and "I flipped my classes. And that was a huge thing that would never have happened without this". Administration interviews recognized the *Pedagogical Change*, e.g. "if you look at the instructional design was before and after, no doubt that the triad mechanism helped improve that a lot."

Faculty clearly felt they grew as instructors and reported changing their teaching practices beyond the Triad courses, e.g. "I changed the way I approached this whole exercise of the teaching" and "the things I learned…really changed the way I do things". Several mentioned that they had never received any formal training in teaching and this was an opportunity to collaborate with colleagues as a form of professional development and training. Conversely, administrator interviews discussed the *Institutional Change of the Triad,* sharing statements about faculty interested in starting new Triads for other courses, although there is no evidence of these plans being enacted.

Table 3: Relative Frequency of the application of external support and recognition child codes for faculty participant interviews

External Support and Recognition Child Codes	Relative frequency applied in faculty participants Interviews (%)	Relative frequency applied in administrative Interviews (%)
School level Administrative involvement and awareness	54.4	76.5
College level Administrative involvement and awareness	11.8	23.5
Satisfied with Administrative involvement	28.8	N/A

*Faculty felt supported by the program and their departments*

External support and recognition was the third most frequently coded comment for faculty participants and second highest for administrative interviews. As seen in Table 1, faculty saw the most involvement and awareness at the school/department level; this support includes supporting participants' conference attendance, attending Triad meetings, supporting innovative changes to the course content, and assuring faculty participants that they would not be penalized if the changes were not well received by the students in their teaching evaluations. Faculty saw much less awareness at the college level, with no cited examples of college level involvement. This was not seen as a negative, however, with a representative comment being "I appreciate being left to do what I want. I don't like too much involvement". Administration perception of their own involvement was higher than that seen by faculty, but most indicated that their role was supportive and not directive. A key exception was a School Head who felt explicitly that they should not need be involved in any way, not even to resolve conflict. These nuanced differences in administrative attitudes suggest inconsistencies that may have impacted the Triad's success and sustainability.

Sustainability and Perceived Obstacles

Perhaps surprisingly, faculty did not express many thoughts on sustainability. Faculty did want to continue their work, e.g. "I think it is valuable because now we can go through and we can

fine tune. What we've already created not a complete redesign, we need to make adjustments" and comments from the administration indicated a desire to see efforts expand to other courses "we already have a proof of concept, I would like to see that continuing". There is evidence, however, that the Triads have not been sustained despite strong desire to do so. An indicator of this is seen, ironically, in the expressions of sustained *informal* relationships, e.g. "we do not meet formally anymore, but we talk at least three times a week, and we immediately email each other whenever an issue comes up that we would like help with" and "we formed deeper relationships. And I think that's been really helpful this semester, because we've continued having those conversations and talked more about the course." As one faculty lamented, however, "the reason that the triad, in some ways is unsuccessful, is that we were never able to make it grow into anything else".

For faculty, primary obstacles include time and workload. Cultural resistance as an obstacle was raised, typically centering around faculty anxiety about new teaching methods. Student resistance was also seen as a potential obstacle, although there was no evidence of actual resistance. Administrators expressed a higher level of concern about cultural resistance; each administrator interviewed felt strong resistance to top down pedagogical suggestions and personal discomfort with encouraging pedagogical change. They were particularly resistant to asking tenure-track faculty to attempt new teaching practices, a peculiar manifestation of the academic hierarchy, but several statements about non-tenure track faculty being more open to change and, in many cases, desiring it. Non-tenure track faculty, however, have more severe time constraints and administrators felt it difficult, if not impossible, to provide time for collaboration and course development.
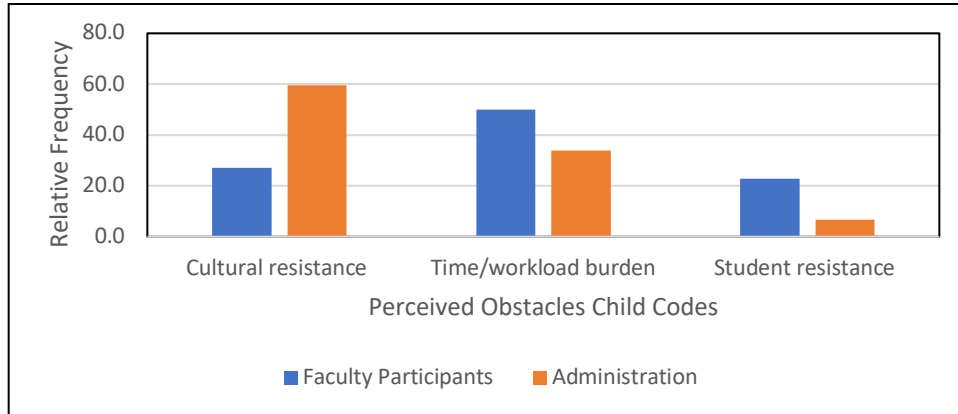
Figure 4: Relative Frequency of Perceived Obstacle Child Codes.

Results by School

To further explore how the administrative landscape impacted the nature of the Triad, we compared results by department. A comparison of key codes (Fig. 5) reveals a strong dynamic of Support and *Collaboration*, *Congeniality*, and *Sense of Community* for Schools A and C and a strong dynamic of *Conflict* response rate from School B. We also see stronger evidence for *Pedagogical Change* and *Personal Growth* from Schools A and C in comparison with School B. These results reflect the narrative of the Triad generated reports. Schools A and C produced reports about cohesive, productive, congenial teams that made the members feel a stronger sense of community. The reports generated by School B tells a story of a group with personality conflicts, arguments and eventually dissolution of the Triad altogether.
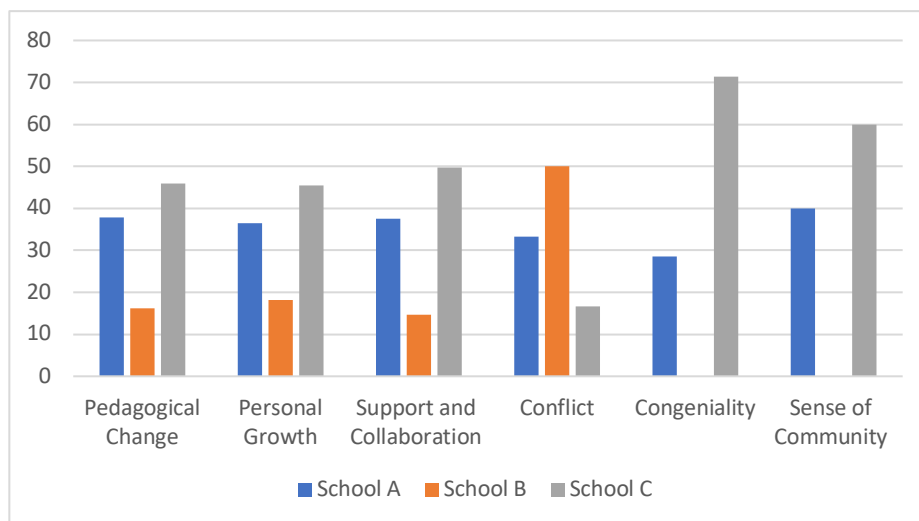
Figure 5: Normalized percentages of select codes by school based on Triad generated reports

A comparison of the *External Support and Recognition* code and its child codes (Figure 6) further reveals a lower perception of administrative awareness and involvement and less evidence of satisfaction with the administrative involvement from School B in comparison to Schools A and C. This is not surprising; it was School B's administrator who explicitly stated that their involvement was not necessary.
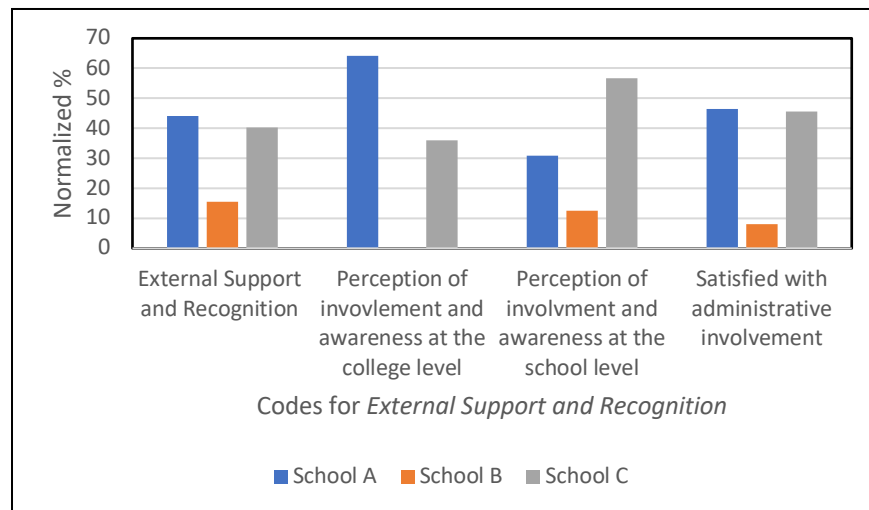

Figure 6: Normalized percentages of external support and recognition child codes based on all interviews and reports

Discussion

Triads as a novel FLC

The evidence suggests that the the Triad collaboration created groups that functioned as unique FLC, affording support and a sense of community through collaboration while fostering pedagogical change and personal growth. Traids share similar outcomes with manytraditional FLCs; participants report a sense of community and less isolation, do attempt new approaches to teaching, and have a platform for discussion and collaboration that did not exist before (Cox, 2001). These collaborations gave faculty confidence to make pedagogical changes in their other courses and fostered personal growth.

Several aspects of Triads differ from conventional FLCS. The smaller Triad size and focus on a single, common course is in contrast with more traditional FLC's larger, interdisciplinary and more general context. (Cox, 2004) Triads share similar attributes with Departmental Action Team (DAT) (Reinholz, Corbo, Dancy, & Finkelstein, 2017), which bring together faculty from the

same department to focus on improving or designing sustainable departmental structures (Reinholz et al., 2017). Where DATs focus on changing departments, and FLCs emphasize the ongoing learning of individual faculty, (Reinholz et al., 2017) Triads appear to encourage and foster both goals.

Triad faculty as agents of change

If supported and sustained, the faculty involved in FLCs, like the Triad, can become agents of change for their institution (Cox, 2001). We see strong evidence of change in classroom pedagogy and in personal growth and some beginning evidence of institutional change with the most established Triad. Faculty in this group moved onto teaching other courses or into coordinating positions and have encouraged other faculty to adopt the evidence-based teaching practices learned through Triad activities. This change is a flow, with administrative support for collaboration leading to pedagogical changes, developing personal growth, and ultimately, faculty to become agents of change (Fig. 7).

Figure 7: Collaborations to agents of change model

Administrative Support and Encouragement to Sustain Collaborations

Where the Triad project appears to be less successful is in sustaining collaborations to allow the time for faculty to become agents of change. Sustaining collaborations and pedagogical changes needs supportive and encouraging environments and there must be supportive structures in place beyond the implementation to foster faculty as sustainable agents of change (Dancy & Henderson, 2010; Tovar et al., 2015) The more support from the institution, the more likely faculty are to fully participate and commit to change (Furco & Moely, 2012). Triad Group 2, is a

cautionary tale of a group with the lowest levels of administrative support and the highest levels of conflict and eventually dissolution before any evidence of personal growth could be observed. For most groups, administrative support was strong at the initial development of the Triad collaborations and nearly all interviews echoed sentiments of a desire for sustained collaboration and expansion, but none had intentional, purposeful plans of support. Very few resources are being allocated for learning communities like the Triads and post grant funding, the Triads will no longer be funded and no point person in place to coordinate Triad efforts. There is also evidence of little synchronization and communications between levels of the institution regarding the Triads.   Some School-Heads were unaware of the support from the Dean, although the Dean was supportive of the project from the beginning.

Another stumbling block is the fear of cultural resistance. Nearly all administrators appeared stifled by concerns that their involvement or encouragement of pedagogical change would be perceived as top-down management and would cause conflict being viewed as infringing on professional identity (Brownell & Tanner, 2012). This could be based largely on historical perceptions rather than a true obstacle. All of the faculty entered the Triads willingly, enthusiastically, and with a desire to learn new practices and feel less isolated. It is possible that there are more faculty desiring these changes than those concerned about their instructional autonomy, particularly at the non-tenure track level. Or perhaps, the culture of the institution may need to shift to recognize and reward best practices in teaching, like they do in research (Brownell & Tanner, 2012).

Recommended Supportive Structures

In addition to providing resources for faculty to work in a Triad, supportive structures represent a commitment to the program from the leadership of the Institution. To continue these collaborations the Triad groups requested time, compensation, and consistent teaching appointments. Time and compensation are obviously closely linked. Time could come in the form of course release but all levels, from faculty to Dean, voiced a concern that it was nearly impossible to give course release to non-tenure track faculty despite the benefits. Therefore, recognition or incentives may be the encouragement faculty need to set aside the time without reducing their course load (Tovar et al., 2015). It was made clear that more time and

compensation is needed for new Triads but for sustaining existing Triads the commitment is much less. When budgeting resources, it should be focused on the front-end work of the Triad collaboration but there should be some resources set aside specially for sustaining the groups. Faculty also wanted some degree of consistent teaching appointments so they could stay with the course they had worked to develop until they felt the course transformation had been finalized. The administrators admitted that there were issues with this logistically, needing faculty to teach other courses that needed to be covered, and culturally, citing fears of other faculty members perceiving it as playing favorites or allowing cliques to develop. Dissemination to provide a clear understanding of Triad practices early and often may help quell some of the cultural resistance and fears of collaboration and pedagogical change (Dancy & Henderson, 2010; Henderson et al., 2012) .

Support during COVID-19

It is important to note that the Triads existed during the global COVID-19 pandemic. The two groups that were functioning during this time both discussed how invaluable it was to have a team to collaborate with during the transition to on-line learning and a community to lean during the stress and uncertainty of the time. Even the group that was not officially functioning as a Triad during the pandemic but had sustained relationships mentioned how helpful it was to have a network of colleagues in place during this time to reach out to as support. Providing a real-world example of the need to support and a sense of community for faculty to provide consistency and continuity for students in times of crisis.

Future Directions

Many faculty and administrators wanted more data on how Triads supported student success. More evaluative studies on the impact Triads had on students would be helpful procuring long term institutional support for these collaborations. Overloaded faculty struggle with the time and knowledge to do these types of studies. This could be alleviated by having third party program evaluator built into the funding to do formal program assessments of their courses.

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