

Shinshu University Advanced Leading Graduate Program
Global Leader Program for Fiber Renaissance
The 2nd International Evaluation
Report
(2018 Academic Year)

Ministry of Education, Culture, Sports, Science and
Technology Advanced Leading Graduate Program
Global Leader Program for Fiber Renaissance

International Evaluation
Report
2018 Academic Year

Introduction

The Shinshu University Advanced Leading Graduate Program (Global Leader Program for Fiber Renaissance) convened the first meeting of the International Evaluation Committee on December 1, 2015, at the Ueda Campus. That meeting yielded a series of enormously valuable opinions in the form of an evaluation by several front-line educators and researchers from overseas universities. During the years following that evaluation, the university worked actively to administer and improve the program based on feedback from members of the International Evaluation Committee and the domestic Third-party Evaluation Committee.

The program carried out its second international evaluation as a written process conducted in April 2019 in order to assess the results of those efforts. This report summarizes the findings of that process.

The program began pursuing its goal of training global leaders who are able to organically connect technologies from different fields and technological and human resources around the world in order to drive new businesses and projects when it admitted its first class of eight students in April 2014. It has since graduated five doctoral degree holders, four of whom work at Japanese companies and one of whom is working at a university in Singapore in an effort to become a global leader. We currently have 35 students, with one on track to receive a doctoral degree in September and nine more to do the same in March 2020.

Because subsidies from the Ministry of Education, Culture, Sports, Science and Technology will end in March 2020, the program will be funded exclusively by Shinshu University starting in April of that year. While the scale of the program will shrink to reflect the new budget, our determination to train global leaders remains unchanged.

In closing, I would like to thank the three members of the International Evaluation Committee for all the time they spent evaluating the program, as well as all staff members who were involved in the evaluation process. I look forward to taking

advantage of feedback from the committee members to make further improvements in the program.

August 2020

Masayuki Takatera

Program Coordinator, Shinshu University Advanced Leading Graduate Program
Global Leader Program for Fiber Renaissance

Contents

1. Overview of the International Evaluation Process
2. Committee Members' Evaluations Using the Program Evaluation Sheet
3. Response to the International Evaluation
4. International Evaluation Sheet (Individual Version)

1. Overview of the second international evaluation

The program conducted its second international evaluation in accordance with its planning process as described below. We asked the following three individuals to make a judgment as to the state of improvements made to the program following the first meeting of the International Evaluation Committee in 2015: Professor Harold Freeman (North Carolina State University, U.S.A.), Professor Thomas Rosenau (University of Natural Resources and Life Sciences, Vienna, Austria), and Professor John Xin (The Hong Kong Polytechnic University, China).

We sent the three committee members the following information about the program in April 2019 and asked them to conduct a written review:

- (1) Self-evaluation Report for the 2018 academic year (in English)
- (2) Third-party Evaluation Report for the 2018 academic year (in English)
- (3) Presentation materials used at the 2018 Third-party Evaluation Committee meeting (PPT, in English)
- (4) Program evaluation sheets completed by committee members as part of the first international evaluation in 2015 (in English)
- (5) Program evaluation sheets for this year (in English)

The results of their evaluation are presented below. Evaluators were asked to evaluate various aspects of the program using the following scale: A (excellent), B- (good), B (average), B- (improvement needed) and C (significant improvement needed).

2. Committee Members' Evaluations Using the Program Evaluation Sheet

(1) Program structures

The Leading Program's administrative organization is operating in an appropriate manner based on its objectives.

Perspective 1-1

Is the Leading Program's administrative organization operating in an appropriate manner so as to train graduates who reflect its objectives?

Committee members' individual evaluations and comments

- A: The Program administration is well positioned to achieve its objectives. It has high-level leadership needed to supply vision and technical expertise required for day-to-day operations. Together, these teams effectively address issues that are essential to making the Program both stronger and sustainable.
- A: The Leading Program, on an outside perspective, is one of the best international PhD schools. Shinshu University can only be congratulated on such a long-term effort in PhD education which – by all means – should be continued. Many international leading universities are in the process of establishing doctoral schools (often using different names, such as PhD colleges). Shinshu University has thus proven to be among those internationally active universities that acknowledge and anticipate their responsibility towards the society and towards future generations. Providing young, future leaders in academia, industries and governance with an exceptional portfolio of abilities – both in science and in related professional qualities – is a most noble aim in higher education. I believe that the Leading Program has even further improved since the last evaluation in 2015 – another step into the right direction. It recognizes some shortcomings of the “conventional” curricula for Japanese students and the educational system, and it tries to tackle these problems directly. This has required some fight against the “inertia” of the system or even caused some resistance among people who do need readily recognize the huge advantages of the program, but the direction was right and has been followed very successfully. The accomplishments of the past years of the existence of the program are extraordinary.
- A: It is impressive that the Program’s administrative organization continuously improves its operation that suits the needs of the program and the students and is proactive towards the any foreseeable difficulties, such as the operation after the end of the Governmental subsidy. As mentioned in my previous evaluation, that the administrative organization has done a good job in the execution of this program from the beginning.

Perspective 1-2

Does the program review its administrative structures in light of social needs?

Committee members' individual evaluations and comments

- A: The Program has a strong connection to its stockholders and is positioned to serve the industrial community, by providing students/graduates who are well trained and excited about taking on the challenges in the fiber science arena.
- A: I understand the term "social needs" in the question in the sense of "societal requirements". In this regard, the leading program has been very aware of current societal needs. Besides young scientists with a good command of their field of expertise, the society and the fiber industry needs leaders with optimum personal, management, and presentation skills, and the program addresses these requirements fully by the curriculum. In this regard it is important to emphasize that the special curriculum for the Leading Program students is a prerequisite to the success of the program. The curriculum is quite demanding, and this is how it should be! A "conventional" PhD education might produce "conventional" PhDs, if we strive for global leaders in fiber science, as announced in the program's policy and title, exceptional means are required, and an exceptional education is needed. This cannot be provided by the conventional lab-centered PhD education, but only through an advanced interplay of courses, lab-work, stays abroad and internationalization efforts. Shinshu University's Leading Program in Fiber Science serves as an outstanding example in this regard.
- B+: It is noted that the third-party Evaluation Committee gave an 'A' for this perspective. The program administration has made great effort in realizing the social needs of the program. It is also noted from the student feedback that the percentage of the students rated 'No opportunity' for Internship is relatively high, which might suggest that there is still room for improvement to let all students to have internship opportunities.

Perspective 1-3

Have structures been put in place to facilitate international collaboration?

Committee members' individual evaluations and comments

- A: This is one of the strong points of the Program, as well as a point of emphasis. The Program has established multiple links with Universities worldwide, providing avenues and expectations for the students to study abroad as well as domestically.
- A: The international collaboration is certainly a stronghold of the leading program. Several internationally leading institutions in fiber science have been selected as partners in the program. With most of these institutions cooperation contracts ("Memorandum of understanding") have been signed so that exchange of students and staff on all levels is institutionalized and easy. Two times a year the students of the first term go on an international excursion (one in Europe, to BOKU University Vienna, one in Asia) which is an important addition to the curriculum, but shows also the good level of international cooperation already reached. International lecturers cover a large part of the lectures in the curriculum of the Leading Program.
- A: There are extensive activities of international collaboration, which were listed in detailed in the Self-evaluation report. The collaboration is also multi-disciplinary and worldwide including universities in not only textiles but also other disciplines and involving universities in different continents, which should be beneficial to the students in this program, as well as to the university itself.

(2) Educational content and methods

The program's educational content and methods are appropriate in order to train graduates who exhibit the qualities set forth in its objectives, and they are being implemented in an appropriate manner.

Perspective 2-1

Is the Leading Program's curriculum appropriate?

Committee members' individual evaluations and comments

- A: The Program is designed and positioned to generate graduates who have

breadth in the general field of fiber science and technology, as well as depth in a chosen domain. The Program faculty wisely decided to dial back on the scope of required courses, to enable students to devote additional time to research and publications.

- A: The content of the curriculum is very much appropriate. However, it must be seen that the high load of courses that the students have to take is different from the usual way of PhD education in Japan where the course load is usually low and the education is mainly performed by in-lab training in the professors' lab and group. The fact that the Leading program demands a high load of courses to be taken is to be seen very positive. However, it bears the problem that the program finds not full acceptance by professors (internally and externally) who just want the students to work in the lab rather than spending much time with courses and general self-education. It would be the wrong conclusion to change the curricula or to lower the quality and demand of the courses. Instead, a focus should be on conveying the advantages of the leading program to the students and to their supervisors, increasing the general acceptance among both students and supervisors and thus also the attractiveness of the program itself.
- A: The program adopted very good approach that incorporates the suggestions from Third-party Evaluation Committee and feedback from the students and made adjustments accordingly to reduce the workload of the students and to adapt the foreseeable change of the funding mode.

Perspective 2-2

Is the curriculum being implemented in an appropriate manner?

Committee members' individual evaluations and comments

- B+: It was a good idea for the Program to limit the number of students enrolled each year and to emphasize course work during year 1, initiating research after the students get a firm foundation. Efforts to enhance the presence of western students in the Program are applauded but it is unclear that the approach (internet-based) will be entirely effective.
- A: The curriculum is very well organized. The length of 2+3 years appears

appropriate and well comparable to international graduate schools. The course load has been addressed above. In my view, the curriculum is well developed, has constantly been optimized, and the course load is appropriate. No changes should not be made in the curriculum. Also the way the leading program is promoted and advertised - within Shinshu University, within Japan, and internationally – has significantly been improved. All professors have been made aware of the advantages of the program – especially within Shinshu University and within Japan so that they are able to acknowledge the course load as a benefit and not as unnecessary duty, which to me seemed to be a challenge in the early phases of the program.

- A: The implementation of the curriculum is found to be appropriate, although it would not be easy considering the students are from different countries with different language abilities.

Perspective 2-3

Does the system enable students to achieve the program's objectives while continuously evaluating their own progress?

Committee members' individual evaluations and comments

- B+: This point is difficult to judge, without direct contact with the students. However, it is clear that the Program leaders are open and responsive to the concerns of the students and they are committed to opportunities for self-evaluation.
- B+: All parts of the curriculum appear to be well balanced. Scientific and general subjects as well as scientific skills and soft skills are contained, and also the versatility of topics is well observed. Care has been taken that aspects of management skills, language skills and presentation skills are equally well contained. A good command of scientific skills is the aim of every PhD education. It is the other aspects – management skills, language skills and presentation skills – that distinguish the Leading Program and also distinguish the PhD students graduating from it and offer them optimized chances in the job market.
- A: The program team made great effort to ensure the quality of education

which was reflected by the frequent interactions with the students with regard to the program's objectives and monitoring the progresses of individual students holistically.

(3) Educational quality assurance system

The program takes steps to assure the quality of the education it offers in an appropriate manner.

Perspective 3-1

Are the program's degree conferment standards appropriate?

Committee members' individual evaluations and comments

- A: The scope of courses required for conferring breadth and depth in the fiber science arena are appropriate for the Program's degrees (MS and PhD). A key strength of the Program is the practical training component in industrial environments. The specific courses and examinations required are appropriate to the field of study and the faculty have expertise in the associated degree areas.
- A: As far as I can judge, the standards for the program's degree are appropriate. The high demand might have rendered it difficult to find students entering the program during the first few years of the program's existence, but eventually it was evident that quality prevails: the high level of education provided in the Leading Program has become widely acknowledged nationally and internationally.
- A: It is found that the standards are appropriate, considering that they are in line with the University's degree conferment standards and adding its only unique ones. It should be complimented that the program has already produced two doctoral degree graduates working in commercial enterprises.

Perspective 3-2

Are the quality assurance standards appropriate when compared to social needs?

Committee members' individual evaluations and comments

- B+: The Program has availed itself to quality assurance checks by outside/third

party entities, especially at the international level. The feedback has been helpful and action plans have been developed to make the program stronger. Student assignment changes were modified as needed to maintain quality standards.

B+: The program recognized societal needs and peculiarities of the Japanese educational system. The curriculum attempts to address these aspects specifically.

B+: The program has done quite a lot in extending the social needs. As with any educational program, the interaction with the commercial world is a progressive process and the fully satisfactory engagement takes time. Nevertheless, the quality assurance standards are surely appropriate.

Perspective 3-3

Is the content of the qualifying examination appropriate?

Committee members' individual evaluations and comments

A: This process is headed by a Student Evaluation Committee. The goal is to assess the readiness of students to enter the Program. In addition to technical information, the qualifying examination now includes questions pertaining to leadership. This is very appropriate, given the types of graduates the Program seeks to produce.

A: I have not been directly involved in the qualifying exam, but the evaluation material gives me the impression that the selection process is very appropriate. As already pointed out, the leading program should remain active also after its first funding phase, this way portraying its advantages within Japan and internationally so that the numbers of students (from within Japan and from Europe / the Americas) graduating from the program will continue to increase.

A: It is appropriate although it seems quite touch considering the number of the students failed in the first QE.

Perspective 3-4

Is the content of the systematic review appropriate?

Committee members' individual evaluations and comments

- A: The Program elected to make this review equivalent to a Masters Exam defense. The Exam included leadership type questions and results indicated that the students were ready for the next stage of the Program. The success of the students was a reflection of their preparation by the educational content of the Program.
- A: The leading program is continuously reviewed, and the reviews are carried out in an unbiased, objective way. Both strength and possible weaknesses can be identified and conclusions can be drawn.
- A: The content of the SR is indeed appropriate with the administration guidelines clearly defined.

(4) Impressions and expectations regarding the program, or any areas should be improved

- As indicated previously, this is an excellent Program and the administrators and associated faculty are to be commended for their hard work and success. The students are positioned to be leaders in the environments they will be entering and a great asset to the Program stakeholders.

The idea of attracting students from the western world by waiving tuition costs is a good thought and worthwhile to explore. However, the Program will also need to ensure the students have sufficient scholarship support to cover the cost of living.

Regarding possible improvements, the plan for making the Program self-sustaining following the end of subsidies would benefit from additional considerations. The plan should include establishing an Alumni Association and a Program Foundation that would be dedicated to reaching out to University/Program graduates and industry to help raise funds.

- The Leading Program, on an outside perspective, is one of the best international PhD schools, and the internationally leading one in Fiber Science. Shinshu University can only be congratulated on such a long-term

effort in PhD education which – by all means – should be continued also beyond the first period of funding. The leading program is an exceptional program for PhD education in Japan. It is on a high level in international comparison. The program attempts to address societal needs very well. It has identified current needs of the fiber industry and the society and reacts to them by providing a well-organized and well-developed curriculum. Students graduating from the Leading Program will have no difficulties at all finding a job in promising positions in which they later become the leaders in sectors related to Fibers Science, no matter whether in academia, industry or governance.

The curriculum is distinguished from the standard PhD education by a high course load. This is not an additional duty for the students, but a crucial part of the special curriculum and the actual benefit of the program. I see the major work in the next years in efforts to secure continuation of the Leading Program and secure its funding. It would be a shame if such an outstanding PhD school would be forced to close down after the initial, extremely successful phase of existence.

It is evident that the leading program has developed into an international leading education hub in Fiber Science, and that it is on the best way into a bright future. I can only urge the responsible persons to do everything to make sure that it continues, and I wish the program and its members all the best for the years to come.

- From an external reviewer point of view, it is interesting to note that this program is unique. So far the program is very successful in producing graduates that meet the quality standard set by the program. The model of education can well become an good example followed by other universities. The only thing I would like to suggest is that the programme should consider how to secure the funding for the students to complete the programme and I am also delighted to see the measures have been taken by the programme committee and the University.

3. Response to the International Evaluation

Masayuki Takatera
Program Coordinator

I would like to thank the three committee members whom we asked to conduct the program's international evaluation for conducting a time-consuming, on-site evaluation and for submitting a written report on their findings. Overall, those findings contain very favorable opinions and evaluations, but they also provide numerous valuable suggestions. The program's staff members look forward to working together to make the program even better by referring to those suggestions so that the Leading Program can contribute to innovation in doctoral education in Japan, in keeping with its goals.

(1) Program administrative structures

All committee members offered a favorable evaluation of the program's administrative structures. Feedback included the observation that "this excellent program must continue after subsidies from the Ministry of Education, Culture, Sports, Science and Technology end in 2020." Regarding continuation of the program, the program began budget planning two years ago, and the decision has already been made to continue the program with funding provided by the university. Although no budget plan has yet been finalized beyond that point, the university will continue to offer the program to the extent that such continuation is viable.

One committee member observed, "The student survey indicated that some students did not have an opportunity to participate in an internship, necessitating improvements to ensure that such opportunities are extended to all students." The program may have not offered an adequate explanation to the committee members. In fact, internships are required, and all program students must participate in one. The survey included all students, some of whom had not yet participated in an internship at the time they responded to the survey.

Committee members also offered praise for the program's record on international collaboration, with closely coordinated structures facilitating student workshops through Manufacturing and Value Creation Seminars I and II, which are made possible by such collaboration, as well as overseas internships for students and lectures by overseas faculty members.

(2) Educational content and methods

Committee members offered extremely high praise for the program's educational content, including the structure and implementation of its curriculum. One observed, "The curriculum is difficult for students but essential, and unlike traditional Japanese doctoral education, which takes place exclusively in individual research labs, it adopts an ambitious approach." Another noted, "There is no need to make changes to the curriculum."

At the same time, one committee member noted a problem with regard to how some faculty members who are not involved with the program view it, writing, "Some faculty members do not recognize this highly ambitious program and instead pressure their students to limit their research to their own labs." This issue was also raised by the first international evaluation. Although the number of professors giving voice to this sentiment has been decreasing as the program's graduates have begun to earn high praise from industry, it cannot be denied that some professors continue to feel this way. The program is committed to continuing to work to change the thinking of such faculty members by producing even more exceptional graduates.

One committee member observed, "It would not be wise to reduce the curriculum workload simply because it's hard for students." The number of courses required for graduation was reduced in the revised curriculum not only to reduce students' course load so that they could devote more time to research, but also to allow the university to continue the program on a self-funded basis after the end of subsidies from the Ministry of Education, Culture, Sports, Science and Technology.

Committee members offered a favorable evaluation of how the program is implementing the curriculum. One noted, “Although it is presumably no simple task to take into account the needs of students of different nationalities who speak different languages, the program is implementing the curriculum in an appropriate manner.”

(3) Educational quality assurance system

All committee members offered a favorable evaluation for the program’s degree conferment standards. One wrote, “The program is ambitious, particularly in how it incorporates education at company facilities, and the degree standards are appropriate in light of the goals set by the program.” Another responded, “It is praiseworthy that the program has already produced two graduates with doctoral degrees, and that both are working in the private sector.”

With regard to the qualifying examination, one committee member noted, “The qualifying examination is appropriate, and I’m glad to see that it incorporates not only technical questions, but also questions about leadership.” However, another observed, “It is problematic that many students fail the first QE.” This issue is caused not by the fact that students actually took the QE but failed it, but rather by the fact that they were unable to take the examination because they failed to demonstrate the level of English proficiency that is required in order to qualify to take the first QE. We want to encourage students to work harder to improve their English proficiency. The second QE lacks the English proficiency requirement, so even students who have not reached the otherwise required level of proficiency can take it. All committee members deemed the systematic review to be appropriate.

(4) Views, expectations, areas needing improvement, and other observations about the program

All committee members indicated that they believe “this remarkable program should be continued after subsidies from the Ministry of Education, Culture, Sports, Science and Technology end.” They also expressed a wish for the program to work to secure funding to that end. Further, some committee

members pointed out the need for the program to work to guarantee student scholarships and offer assistance with living expenses. With regard to the continuation of the program, Shinshu University has already decided to fund the program on its own going forward, and we plan to continue working to train students in line with the program's goals. With regard to offering student scholarships and assistance with living expenses, we plan to augment the half-tuition exemption enjoyed by existing program students with a fixed-amount scholarship, and we're planning to provide as much assistance as is possible within the university's budget. However, although we will continue to offer the half-tuition exemption to new students enrolling after the 2020 academic year, unfortunately we do not plan to offer scholarships to that group. Consequently, we plan to take an active approach to helping students apply for various scholarships and outside money as a way to fund their training.

4. International Evaluation Sheet (Individual Version)

Shinshu University Advanced Leading Graduate Program Second International Evaluation Committee Program Evaluation Sheet (Individual Version)

Target dates: January 2018 to December 2018

A: Exceptional; B+: Excellent; B: Normal; B-: Somewhat more effort required; C:
Significantly more effort required

Overall Evaluation

[A / B+ / B / B- / C]

Evaluation items by objective

1. Program structures

[A / B+ / B / B- / C]

The Leading Program's administrative organization is operating in an appropriate manner based on its objectives.

Perspective 1-1

Is the Leading Program's administrative organization operating in an appropriate manner so as to train graduates who reflect its objectives?

[A / B+ / B / B- / C]

Comments

Perspective 1-2

Does the program review its administrative structures in light of social needs?

[A / B+ / B / B- / C]

Comments

Perspective 1-3

Have structures been put in place to facilitate international collaboration?

[A / B+ / B / B- / C]

Comments

2. Educational content and methods

[A / B+ / B / B- / C]

The program's educational content and methods are appropriate in order to train graduates who exhibit the qualities set forth in its objectives, and they are being implemented in an appropriate manner.

Perspective 2-1

Is the Leading Program's curriculum appropriate?

[A / B+ / B / B- / C]

Comments

Perspective 2-2

Is the curriculum being implemented in an appropriate manner?

[A / B+ / B / B- / C]

Comments

Perspective 2-3

Does the system enable students to achieve the program's objectives while continuously evaluating their own progress?

[A / B+ / B / B- / C]

Comments

3. Educational quality assurance system

[A / B+ / B / B- / C]

The program takes steps to assure the quality of the education it offers in an appropriate manner.

Perspective 3-1

Are the program's degree conferment standards appropriate?

[A / B+ / B / B- / C]

Comments

Perspective 3-2

Are the quality assurance standards appropriate when compared to social needs?

[A / B+ / B / B- / C]

Comments

Perspective 3-3

Is the content of the qualifying examination appropriate?

[A / B+ / B / B- / C]

Comments

Perspective 3-4

Is the content of the systematic review appropriate?

[A / B+ / B / B- / C]

Comments

In closing, please describe any impressions or expectations you have regarding the program, or any areas you believe should be improved.

Comments

Form completed by: _____