

I Have a Dream... That Nagoya  
University's G30 NEXT shall Flourish  
—名古屋大学G30 NEXTへの熱い期待—

June 2nd, 2016, 18:30 -19:30

Kosuke Shobatake

正 畠 宏 祐

Designated Professor, Ph.D in Chemistry  
International Education and Exchange,  
Nagoya University

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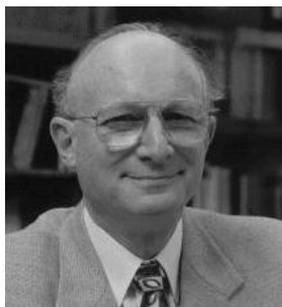
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# 1. My Short History (私の簡単な履歴)

- (1) Born on Dec. 16, 1941, at a port town, Kinoue, on an island in the Inland Sea (瀬戸内海) near Hiroshima.
- (2) In 1960 entered Kyoto University, Dept. of Synthetic Chemistry, School of Engineering (until 1st year of doctor course)
- (3) Feb. 1967 I went to IIT in Chicago as a research fellow to study infrared spectroscopy of metal coordination compounds until Aug. 1969.
- (4) In 1968 university unrests (大学紛争) broke out in Japan. In Sept. **1969 I entered the graduate school (大学院) , Univ. of Chicago, Dept. of Chemistry.**

# 1. My Short History – no.2

(5) Stayed in US and also in Germany until 1979 (Thesis advisors at UChicago: Prof. Yuan T. Lee(李遠哲) and Prof. S. A. Rice; Reaction Dynamics using Molecular Beams).



Prof. Stuart A. Rice



Prof. Yuan T. Lee,  
Nobel Prize in Chemistry, 1986

(6) Aug. 1979, Associate Professor, Inst. for Molecular Science in Okazaki (岡崎)

(7) Dec. 1994, Professor, Applied Chemistry Department, Nagoya Univ.; Retired in 2006

(8) Oct. 2009, Global 30 Project Coordinator

# 1. Short Personal History – No. 3

## Impressions on the education at Univ. of Chicago

- (1) Teaching assistant (**TA**) for Freshman Chemistry.
- (2) TA's duties: 1) attend three lectures per week, 2) supervise a tutorial class and a laboratory/week, 3) grade lab reports, and answers for homework, and **midterm and final exams**.
- (3) Surprise: freshmen's low math proficiencies!  
Only four out of 25 students in my TA could solve  $ax^2 + bx + c = 0$ . None of them knew about logarithm.
- (4) One year later they changed quite a lot!!
- (5) I found: If education is properly offered, students' skills can be dramatically improved!

Efforts spent for entrance examinations by Japanese high school pupils could become redundant!

## 2. Study Hour Comparison between Univ. Students in US and Japan (勉強時間－米国と日本の大学生の比較)

### 2.1 Question: For how many hours do university students study in US and Japan?

- They say that students in Japan don't study as hard as American students. – Is it true?
- If yes, (1) give proof for it,
- (2) tell me the reasons for it,
- (3) Is it possible to improve the present situation?, and
- (4) what should we do?

At NU, G30 NEXT with TGU can be a solution.

## 2.2 大学設置基準(日本)

### 2.2 Standards for Establishment of Universities (Japan)

1. One credit(単位): Given for the study of 45 hrs.  
Lecture course: 15 hrs  
Tutorial course: 15 – 30 hrs  
Laboratory: 45 hrs
2. General practice: ~130 ( $\geq 124$ ) credits for graduation in 4 years
3. Class weeks: At least 35 weeks/year

## 2.2 大学設置基準(日本)

### 2.2 Standards for Establishment of Universities (Japan)

- Continued

5. How many hours should a student spend per week and/or day?

(1) Total hours:  $130 \times 45 = 5,850$  hr, **41.8 hr/w**

(2) Lecture and lab hours:  $[80 \times 15 + 20 \times 30 + 30 \times 45]$  3,150 hr, **26.25 hr/w**

(3) Outside of class= 2,700 hrs, **19.3 hr/w**  
**3.9 hr/d (5 d/w)** or **3.2 hr/d (6 d/w)**

## 2.3 US: Federal Definition of one Credit Hour

The Federal definition (米国政府の定義) :

One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks; (for a total of 45 hours of work)

Or at least an equivalent amount of work as required in this definition for other activities including laboratory work, internships, practica, studio work and other academic work leading toward the awarding of credit hours.“

## 2.4 Graduation Requirements in US Universities (米国の大学の卒業要件)

### Typical Practice

1. One credit: 45 work hours.
2. For graduation 128 credits should be acquired.
3. A student should spend for study = 5760 hours.
4. School weeks: 32 weeks/year
5. School years: 4 years
6. Students pay tuition fee for each course registered!

As a result,

Student spend  $5760 \text{ hrs}/(32 \times 4) = 45 \text{ hr/week}$

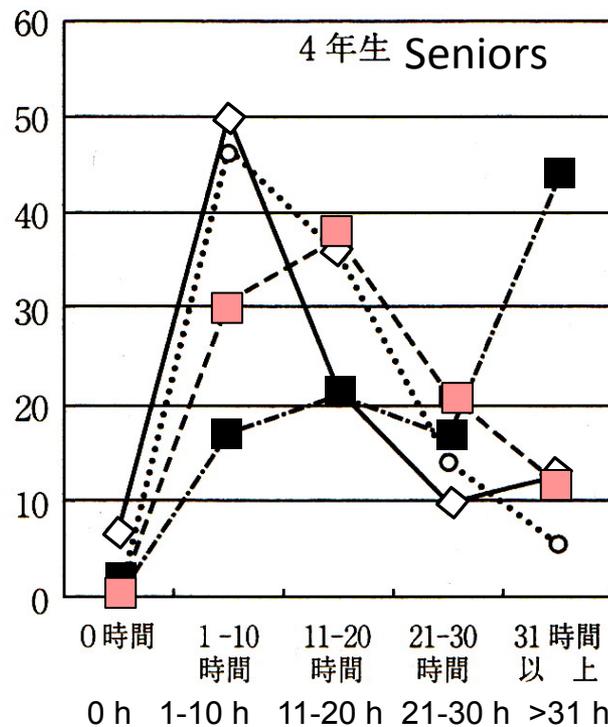
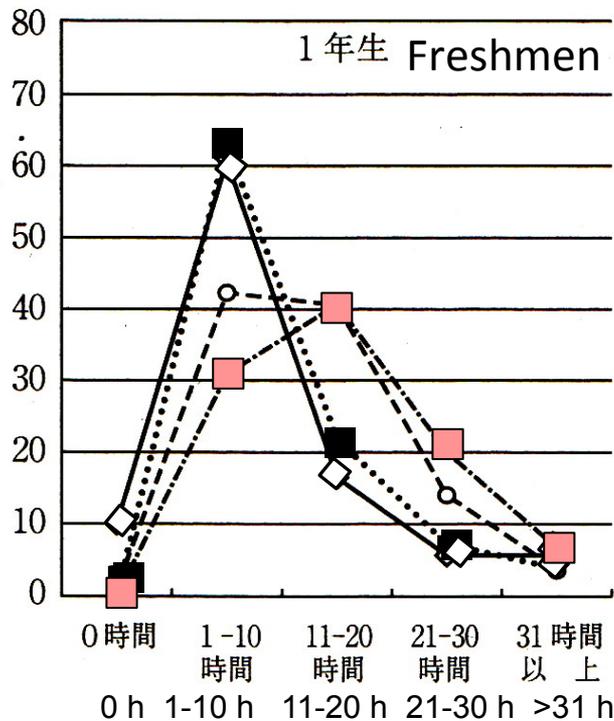
Student spend  $3840 \text{ hrs}/(32 \times 4) = 30 \text{ hr/week}$  for learning

**6.0 hr/d** (5 d/w) AND **5.0 hr/d** (6 d/w)

## 2. Work Hour Comparison between University Students in USA and Japan (勉強時間－米国と日本の大学生の比較)

### 2.5.1 Survey Data -1

Study-hour distributions (%) of university students in US and Japan  
(Dependence on Grades and Disciplines)



◇ 日本文系 JPN, LAH  
 ■ 日本理系 JPN, S&E  
 ○ 米国文系 US, LAH  
 ■ 米国理系 US, S&E

Motohisa Kaneko (金子元久), “学習させる大学”, IDE現代の高等教育, 2009(11), pp 5-11.

## 2.5.2 Average weekly work hours - dependence on grade and field of study (Bunkei or Rikei)

平均学習時間(学年別・専門別)

		Freshmen (1年生)		Seniors (4年生)	
Study Type (学習勉強の種類)		Bunkei	Rikei	Bunkei	Rikei
Japan	Lectures, Tutorials, and Lab	17.8	20.0	9.8	9.7
	1. Work relevant to Lectures, Tutorials & Lab	5.7	6.5	4.2	6.0
	2. Work for Graduation Research	-	-	5.2	17.2
	3. Study on Subjects of self-interest	3.2	3.1	5.1	5.1
USA	1. Work relevant to Lectures & Lab	13.3	15.7	13.1	16.6

NSSE (National Survey of Students Engagement) Data from **360,000** randomly selected students from **617** US colleges and universities. Many top private universities didn't join this survey!

Note: Bunkei (文系): Arts and Humanities, Social Sciences and Business

Rikei (理系): Science, Engineering, and Biological Sciences

Reference

Motohisa Kaneko (金子元久), “学習させる大学”, IDE現代の高等教育, 2009(11), pp 5-11.

## 2. 5.3 Study hours of independent and “lazy” Japanese students

Study hours of independent and “lazy” Japanese students  
(per week)

Unit: hour. minutes

Disciplines	Student's Type	Per cent	School Days				Sum	Recess
			Lectures and Lab	Study hour rel. Lectures	Study hour irel Lectures	Thesis Research		Study Hours
LAH	SS Type	16.2%	16.30	12.35	14.11	6.05	49.21	12.21
	Non-SST	83.8%	19.03	4.18	2.23	0.56	26.39	4.10
SAE	SS Type	17.1%	18.11	17.05	10.31	9.57	55.44	10.38
	Non-SST	82.9%	21.27	5.47	2.22	2.56	32.33	4.44
Medical	SS T	11.5%	20.47	19.13	10.56	8.31	59.28	12.25
	Non-SST	88.5%	23.43	6.01	2.02	1.39	33.24	5.18

注) 自立型は、週当り授業出席時間が6時間以上であり、授業関連学習時間と授業に関係ない学習時間の和が授業出席時間以上である者。丸め誤差により、学期中学習時間の各項の和と計が一致しない場合がある。

Field and/or Disciplines

LAH: Liberal arts and humanities,

SAE: Sciences, Agriculture, and Engineering,

Medical: Medical and Health

Student's Type

SS Type: Self-study Type, Non-SST: Non-self-study Type

Reference

Urata Hiroaki, 浦田広明、IDE現代の高等教育、2009 (Nov., No. 515) pp. 20-25

## 2. Study Hour Comparison between Univ. Students in US and Japan (勉強時間－米国と日本の大学生の比較)

### Survey Data – 3 (of only Japanese Students)

表3 自立型学生の学習時間 (週当り)

単位：時間. 分

		構成比	学期中				休暇中	
			授業出席 (実験含む)	授業関連 学習	授業と関係 ない学習	卒業研究 (卒論)	学習時間 計	学習時間 計
人文社会	自立型	16.2%	16.30	12.35	14.11	6.05	49.21	12.21
	非自立型	83.8%	19.03	4.18	2.23	0.56	26.39	4.10
理工農	自立型	17.1%	18.11	17.05	10.31	9.57	55.44	10.38
	非自立型	82.9%	21.27	5.47	2.22	2.56	32.33	4.44
保健	自立型	11.5%	20.47	19.13	10.56	8.31	59.28	12.25
	非自立型	88.5%	23.43	6.01	2.02	1.39	33.24	5.18

注) 自立型は、週当り授業出席時間が6時間以上であり、授業関連学習時間と授業に関係ない学習時間の和が授業出席時間以上である者。丸め誤差により、学期中学習時間の各項の和と計が一致しない場合がある。

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高等教育、2009 (Nov., No. 515) pp.  
20-25

## 2. Study Hour Comparison between Univ. Students in US and Japan (勉強時間－米国と日本の大学生の比較)

### 2.6 Conclusions (結論)

- (1) In both US and Japan students have to **study almost equally well!** (approx. 5 hours or so for out-of-class work or private study).
- (2) Students in US work evenly during four years.
- (3) Students in Japan study much less than those in US for out-of-class work.
- (4) Approx. 17% of students study very hard in both countries.
- (5) Senior students, especially rikei (理系) students, in Japan spend a lot more time for graduation research (卒業研究).

## Group discussions on the need of private study (自習)

Following the Standards for Establishment of Universities (大学設置基準) in Japan and Federal Definition of one-credit hour (連邦政府の一単位の定義) in USA, students have to study approx. 5 hours a day for out-of-class study.

Q 1. Why do you think this sort of rule is enforced? Do you think it is needed?

Q 2. What skills do you wish to polish during your university life and why?

## Probable Answers to Q1: Why needed?

### (1) Definitely needed because

- a) the contents taught in the lectures are limited.
- b) reviewing and preparing for the lectures are vital to remember and understand what is taught in class.
- c) various skills needed in the future are gained by independent studies by themselves.

## Probable Answers to Q2: What skills?

- |                            |                              |
|----------------------------|------------------------------|
| (1) English proficiencies. | (2) Communication skills     |
| (3) Creativity             | (4) Positive thinking skills |
| (5) Curiosity              | (6) Critical thinking skills |
| (7) Cultural Diversity     | (8) Japanese proficiency     |
| (9) Qualifications         | (10) Tenacity/perseverance   |

## 3. Role of Teaching Assistants (大学におけるTAの役割)

### 3.1 Roles of Teaching Assistants in US Universities.

1. TA works 13 hrs/week for 25 students in his/her class.
2. 4 Tas are needed for a class of 100 students.
3. Tas are vital for undergraduate and graduate education, especially at research-intensive universities.

#### ◎ Reasons:

- (1) Professors don't have to spend much time for teaching and thus can spend a lot of time for research with TA's help.
- (2) Less expensive to hire a TA than a professor to do the same job.
- (3) Tas teaching, which is vital for future duty as a professor.
- (4) They believe that teaching is the best way to understand things.
- (5) Students are forced to study and it is good for them.**

## 3.2 TA cost for undergraduate education in US

Item	Number	Unit
Credits /course	3	credits
TA's work hours	13	hr/week
Hourly wage (\$/hr)	44.7	(\$/hr)
Monthly payment	2,500	\$/month
No. of students in a TA's class	25	students
Tuition fee income for 25 students	100,000	\$
TA's payment/Tuition fee income	7.5	%
Total tuition fee income	168	million\$
TA Budget	13	million\$

Assumptions:

Tuition fee: 42,000 \$/yr, UG students: 4,000, TA's monthly payment: 2,500 \$/month; Quarter system (three quarters/y)

### 3.3-1 Nagoya University's Present Typical TA Cost for a Course and a Total TA Hiring Budget for all UG Courses Offered with TAs

Item	Number	unit
No. of Credits/course	2	credits
TA's work hours/week	2	hr/w
Hourly wage	1,400	Y/hr
TA cost for a Course	42,000	Y
No. of students in a TA's class	80	students
Course tuition fee for 80 students	2,637,785	Y
TA cost/tuition fee income	1.59	%
Total tuition fee income for UG	5.4E+09	Y
TA hiring budget	8.5E+07	Y

Comment: 2 hr/w for TA's work hours per week and 80 students in a class is too short!

### 3.3-2 NU's TA Hiring Cost for a Course with a Better Support and a Total TA Hiring Budget for all UG Courses Offered with TAs

Item	Number	unit
Credits /course	2	credits
TA's work hours/week	4	hr/w
Hourly wage	1,400	Y/hr
TA cost for a Course	84,000	Y
No. of students in a TA's class	80	students
Course tuition fee for 80 students	2,637,785	Y
TA cost/tuition fee income	3.18	%
Total tuition fee income for UG	5.4E+09	Y
TA hiring budget	1.7E+08	Y

4 hr/w for TA's work hours per week and 80 students in a class will be minimum!

### 3.3-3 NU's TA Hiring Cost for a Course with a Better Support and a Total TA Hiring Budget for all UG Courses Offered with TAs

Item	Number	unit
Credits /course	2	credits
TA's work hours/week	4	hr/w
Hourly wage	1400	Y/hr
TA cost for a Course	84,000	Y
No. of students in a TA's class	25	students
Course tuition fee for 80 students	824,308	Y
TA cost/tuition fee income	10.2	%
Total tuition fee income for UG	5.36E+09	Y
TA hiring budget	5.5E+08	Y

Comment: 4 hrs/w for TA's work hours per week and 25 students in a class is manageable by a TA.

### 3.3-4 NU's TA Cost for a Course with a Much Better Support and a Total TA Hiring Budget for all UG Courses Offered with TAs

Item	Number	unit
Credits /course	2	credits
TA's work hours/week	6	hr/w
Hourly wage	1,400	Y/hr
TA cost for a course	126,000	Y
No. of students in a TA's class	25	students
Course tuition fee for 25 students	824,308	Y
TA cost/tuition fee income	15.2	%
Total tuition fee income for UG	5.4E+09	Y/y
TA hiring budget	8.2E+08	Y/y

## 4. NU's Global 30 International Programs

(英語だけで学位が得られるG30教育)

### 4.1 NU's G30 Project

Visit <http://admissions.g30.nagoya-u.ac.jp/en/>

- (1) MEXT funding: started in 2009 ended in FY2014
- (2) Undergraduate as well as graduate programs
- (3) Curricula: the same as the existing NU programs.
- (4) Offer education solely in English
  
- (5) First batch enrolled in October, 2011
- (6) Not the numbers, but the quality of students**  
UG Programs: a total of ca. 200 students are studying
- (7) 5 UG Programs, later expanded to 6 Programs

## 4.2 NU's G30 Undergraduate Programs

1. Auto-Eng: Automotive Engineering , School of Eng.  
Departments: Mechanical Eng. and Electrical and Information Eng.
2. Fundamental and Applied Physics: School of Sci. and School of Eng.
3. Chemistry: School of Sci., and School of Eng.
4. Biological Science: School of Sci. and School of Bioagr.
5. Social Science: School of Economics and Law School
6. Japan-in-Asia Cultural Studies: School of Letters  
(First batch enrolled in 2014)

## 4.3 My Personal Comments on G30 UG Education

### Good Points:

- (1) Small class size, thus easy access to lecturers
- (2) A lot of homework imposed to students
- (3) Students study very hard due to lecturers' efforts
- (4) Graduates of 2015 entered many good graduate schools, including NU.

The success owes to G30 professors' efforts and small class sizes, despite of the fact that number of hours for TA is only 2 hrs/w.

## 4.3 My Personal Comments on G30 UG Education - continued

### Weak points and proposed changes:

- (1) Course loads for freshmen seem too high.
- (2) Contents offered may be too high, especially for Auto-Eng, Physics, and Chemistry Programs.
- (3) Longer TA's work time (4 hrs/w) is needed in order to make TA's assistance more meaningful.
- (4) For many courses lecture time should be made longer (3 or 4 hrs/w instead of present 2 hrs/w) to promote more interactive lecturing between lecturer and students.

# 5. I Have a Dream... That NU's G30 NEXT Shall Flourish (名古屋大学G30 NEXTへの熱い期待)

## 5.1 NU MIRAI 2020

名古屋大学松尾イニシアティブ  
NU MIRAI 2020

**名古屋大学を世界屈指の研究大学に**  
Nagoya University Matsuo Initiatives for Reform, Autonomy and Innovation 2020

### Education

By promoting a world-class education, we aim to foster courageous intellectual leaders that can contribute to human well-being. We are changing the relationship between Nagoya University and secondary schools.

- **Admitting excellent students:** Improving admission system and establishing admission center
- **Reforming three policies:** Degree conferment, curriculum design & student admissions
- **Improving international compatibility of educational system:** Introducing quarter system and international joint degree programs

### Research

Inspired by our Nobel laureates, we are committed to the creation & discovery of knowledge through research.

- **Supporting frontier research led by:**
  - “Institute for Advanced Research” for basic research
  - “Institute of Innovation for Future Society” for practical research
  - “ITbM” for WPI program
- **Establishing new research centers:** i.e. WPI-Next
- **Recruiting, retaining & supporting most talented faculty & fostering world-class researchers:** Greater support for women, non-Japanese & early-career



### International

We are developing a university that attracts the best students, faculty & staff from around the world & contributes to creating a more sustainable society. In particular, we seek to work closely with countries in Asia.

- **By 2020:**
  - Increasing number of international students to 3000
  - Increasing internationally experienced faculty members to 650
  - Increasing domestic students studying abroad to 1000
- **Increasing international students enrolled in English-taught curriculum & number of English-taught courses:** i.e. G30 NEXT
- **Implementing strategies with focus on Asian countries:** i.e. Asian Satellite Campus & ASEAN Net PLUS

NU MIRAI  
2020



### University-Industry Collaboration

As a core university located in one of the world's most dynamic industrial clusters, we conduct research and pursue innovation that contributes to value creation for betterment of society.

- **Establishing a new “industry-academia-government collaboration” to implement open innovation:** Establishing new research center on gallium nitride (GaN) & “Future Integrated Electronics Research Center”
- **Fostering people who contribute to society:** Increasing entrepreneurial education & industry-academia collaboration
- **Increasing regional resilience for safety & disaster relief:** Establishing Disaster Mitigation Research Center & new model for industry-academia-government-civil society collaboration



# NU MIRAI 2020



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## 5.2 Expected Influence of G 30 Programs + TGU Project upon NU's Education

- (1) All of NU students will study much harder than now.
- (2) Varieties of skills will improve dramatically.
- (3) Especially, English proficiency will be dramatically better. They will be able to quickly collect all pieces of information by themselves.
- (4) They will be ready to start high levels of researches.
- (5) Cultural exchanges among international and Japanese students will be more active.
- (6) All meidai students will become globalized citizens<sub>30</sub>  
etc

5. I Have a Dream... That NU's G30 NEXT Shall Flourish  
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5.3 What should we do to materialize the better academic environments?

1. Realization of the of TA's contributions to education as well as the presence of international students, visitors, and faculty members.
2. More TA budget: Consider up to ca.10% raise of the tuition fees for undergraduate students
3. Introduce a system to train TAs.
4. Encourage professors to give more interactive lecturers.
5. Encourage students to study harder.

Question:

Do you agree that studying harder at NU is good for you?

Thank you very much for your attention!  
ご静聴ありがとうございました

# 第3回 名古屋大学留学生・日本人学生文化交流会

## 3RD NU International Students Gathering

名古屋大学生・留学生が送る世界へのガイド！ 英語で話して友人をつくろう！  
外国の文化・習慣・政治・経済等の説明を聴き、質問もしましょう！

Noon-2 pm  
Session:

India  
Indonesia  
Malaysia  
New Zealand  
Thailand  
UK  
USA

2 pm - 4 pm  
Session:

Japan  
France  
Korea  
Singapore  
Sri Lanka  
Uzbekistan  
Turkey

NU international students present a guide to the world!  
Interested in diverse cultures around the globe?  
Come and join us!



日時 : 11月3日 (文化の日) 10~16時  
場所 : ES総合館3階、ES034&035  
言語 : 英語 (&日本語)

平成27年度名大留学生支援事業の一つとして、  
本交流会を開催します。主に、日本人学生が  
留学生と英語で話し、友達になることをめざ  
しています。奮って参加下さい！！  
もちろん、一部参加だけでも結構です。

参加費 : 無料 Admission Free  
菓子・飲み物 Snacks and drinks served

お問い合わせは : Shobatake@nagoya-u.jp 内線 6531 正島 (しょうばたけ) まで  
又は、srishtikaundilya@gmail.com まで

## No. 3 NUISG (Cultural Exchange Gathering) Survey (アンケート 結果)

### 3. Comment on this Gathering

( 24 ) Very good. ( 18 ) Good. ( 1 ) So so. ( 0 ) poor

理由 Reasons:

- (a) Very organized event!
- (b) Not many people showed up! (c) Informative,
- (d) **The people who came were enthusiastic and food was provided.**
- (e) Lots of snacks and we get to interact with Japanese students.
- (f) Met a lot of different people.
- (g) Interesting to talk to everyone.
- (h) Varieties of nationalities.
- (i) Good opportunity to communicate with international students.
- (j) いろいろな国について知れて良かったです。
- (k) 異文化と触れあえるいい会合だから。
- (l) 早い段階で広報を行っていたらもっと人が集まったかも。 **Advertise this event much earlier.**
- (m) 英語の勉強になった。
- (n) **I could experience diverse cultures in only one room!**



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NU M  
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